LAB-83-01

Permanent Counting Stations (PCS)

Microcomputer Programming Manual Supplement

Ontario

Ministry of
Transportation and
Communications

Transportation
Technology and
Energy Division

LAB-83-01

Permanent Counting Stations (PCS)

Microcomputer Programming Manual Supplement

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Supplement to LAB-82-03
September 1982

Published by:
The Transportation Technology and Energy Division
Ontario Ministry of Transportation and Communications
Hon. James W. Snow, Minister
H.F. Gilbert, Deputy Minister

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April 1983

TABLE OF CONTENTS

	PAGE
1/ INTRODUCTION	1
2/ ALTERATIONS	2
APPENDIX A	7
EQUATE FILE	161
PROGRAM LISTING	162
CROSS-REFERENCE TABLE	193

LIST OF FIGURES

PAGE

2.1/ General RAM Page ϕϕxy 3

2.2/ Detailed RAM ϕϕxy Organization 4

2.3/ Lane and Detector Configuration 5

2.4/ Occupancy Limit Threshold 6

1/ INTRODUCTION

In the Permanent Counting Stations' onboard software there are two distinct, but inter-dependent, areas of effort; that of computation and communication. The area of computation, documented in the September 1982 publication, "Permanent Counting Stations (PCS) Microcomputer Programming Manual" (LAB-82-03), covered concerns on the completed Phase II software. This document is a supplement to that publication; it contains changes that resulted from alterations made to the communication area in December. Although these changes are minor they may cause confusion if the firmware and program documentation is scrutinized.

In order to maintain coherence between the program listing and explanation; the page numbering of Appendix A is consistent with the numbering of the original document.

2/ ALTERATIONS

The changes generated by the communication software result in the relocation of variables. Addresses of variables have been reassigned in the areas of time parameters, error flags and lane/detector configuration.

The new assignment for the detector error flags can be seen in Figure 2.1, General RAM Page ϕϕxy. This new assignment finds DETER1-4 in locations ϕϕ8C-ϕϕ8F which should replace Figure 2.2 on page 4 and Figure 3.1 on page 15 in the original publication.

Figure 3.2, Detailed RAM ϕϕxy Organization on page 16 should be replaced with the new Figure 2.2. Not only does it contain the specifics of the new detector area, but also that of the time parameters and lane/detector configuration. In the area of timing, the parameters of concern have been advanced by one memory location while the lane/detector variables have just changed their order.

Finally, the reader's attention is brought to Figure 2.3 which is an update of the operating procedures. The operating procedures and concepts have not changed but the location of the parameters representing the lane/detector configuration have merely been altered. Therefore, Figure 2.3 represents the new address of parameters that define the physical layout of the loop detectors in Section 4, Operating Procedures on page 27 of the original documentation.

All the alterations discussed are incorporated in the information contained in Appendix A. This is the updated version of the equate file, program listing and cross-reference table. The page and line numbers of the original program explanation still match the updated Appendix.

The author wishes to apologize for the error in Figure 5.1 on page 45 of the original document and takes this opportunity to correct it. The parameter "OC1OCM" is defined to be $ϕ7 by the initialization routine and as a result the correction can be seen in Figure 2.4.

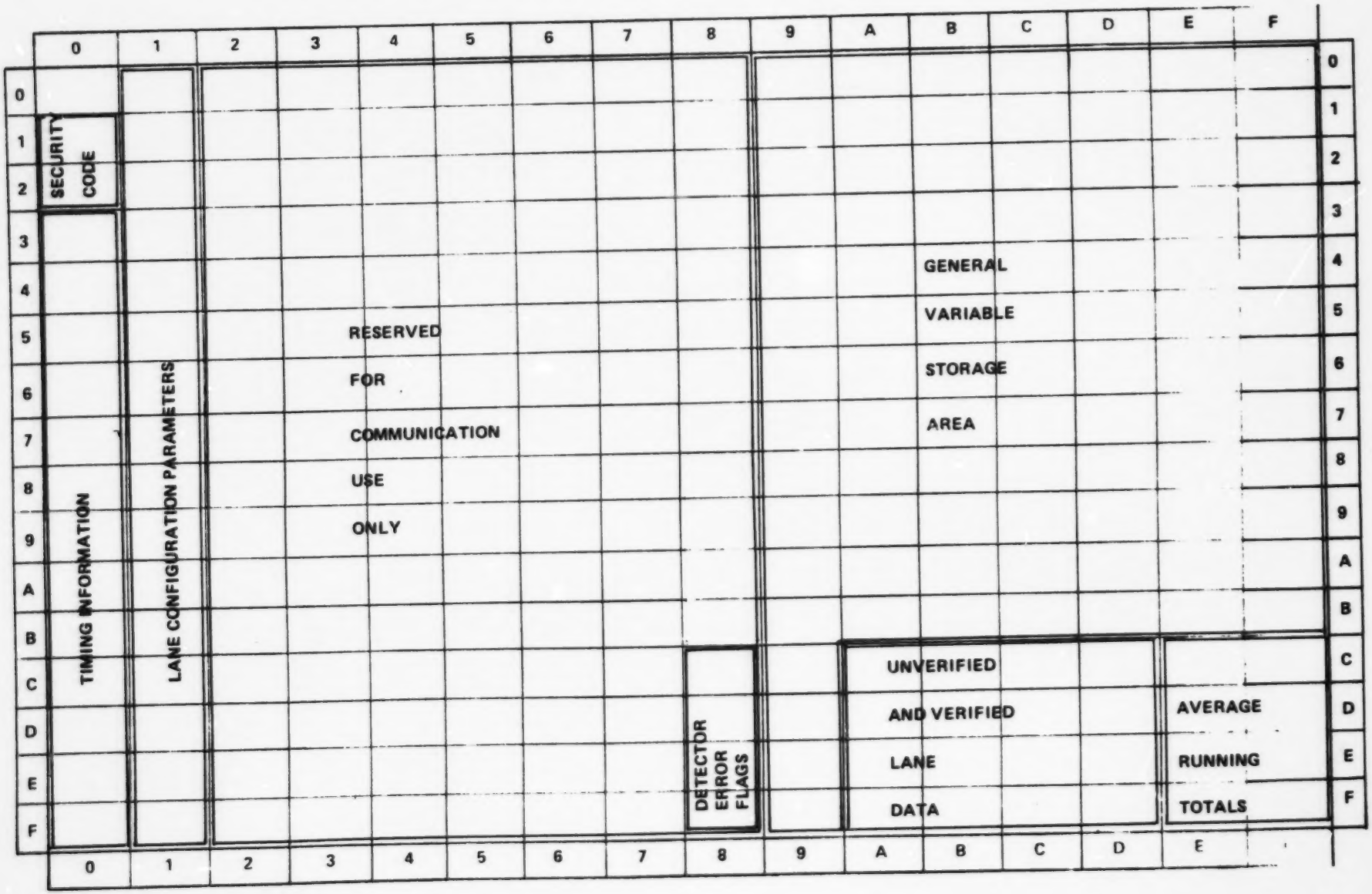


Figure 2.1/ General RAM Page ϕϕxy

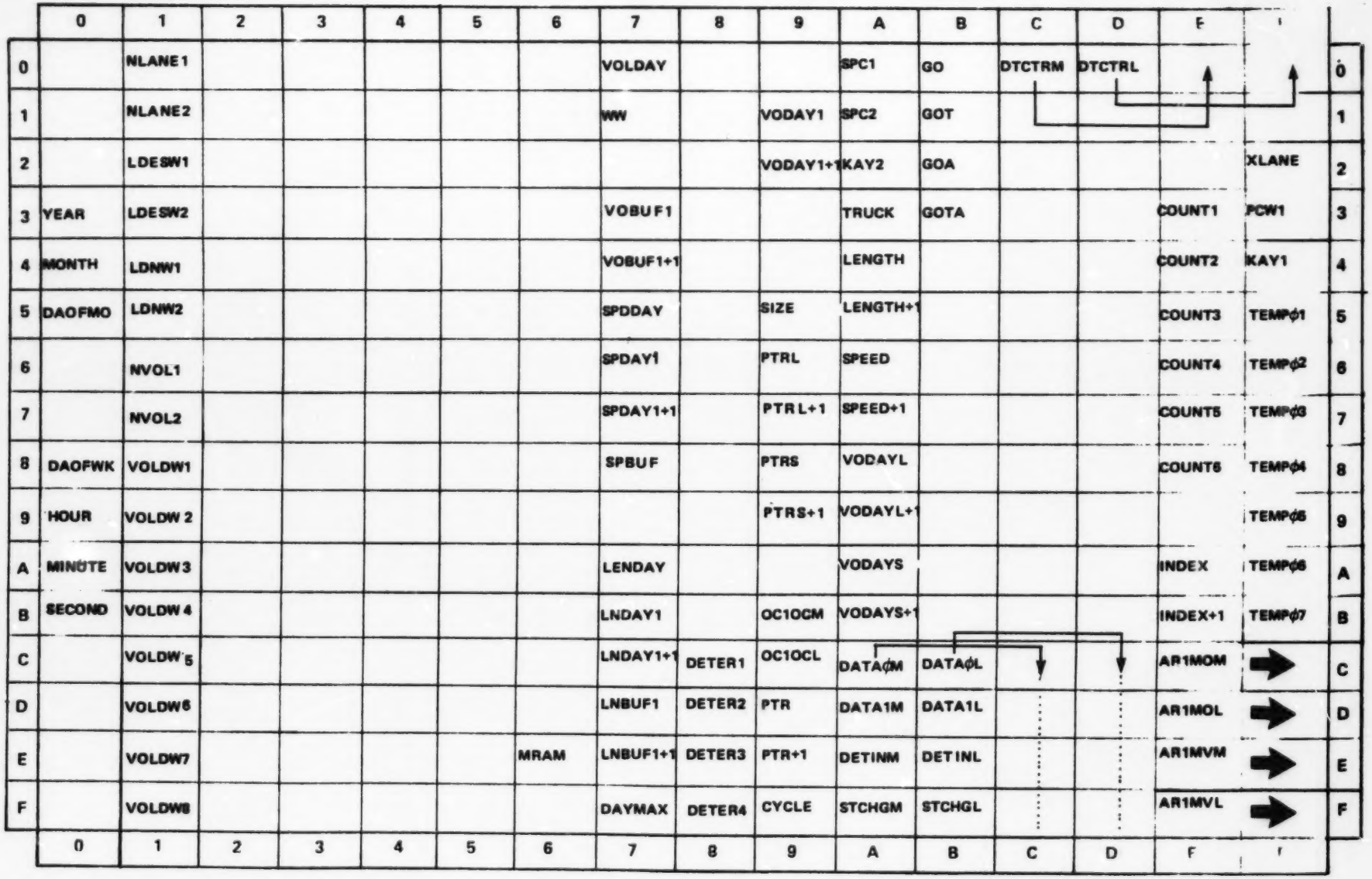
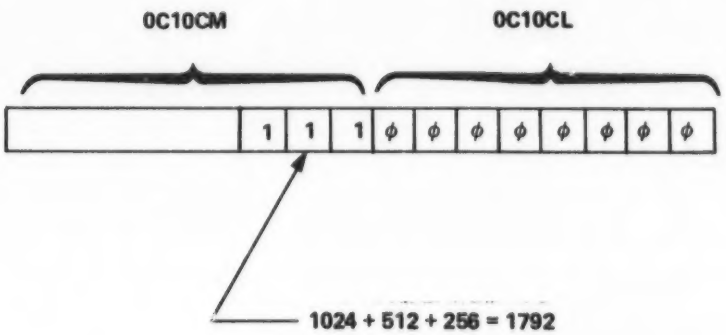

0 1 2 3 4 5 6 7 8 9 A B C D F
0 NLANE1 VOLDAY SPC1 GO DTCTRM DTCTRL
1 NLANE2 WW VODAY1 SPC2 GOT
2 LDESW1 VODAY1+1 KAY2 GOA XLANE
3 YEAR LDESW2 VOBUF1 TRUCK GOTA COUNT1 PCW1
4 MONTH LDNW1 VOBUF1+1 LENGTH COUNT2 KAY1
5 DAOFMO LDNW2 SPDDAY SIZE LENGTH+1 COUNT3 TEMPϕ1
6 NVOL1 SPDAY1 PTRL SPEED COUNT4 TEMPϕ2
7 NVOL2 SPDAY1+1 PTRL+1 SPEED+1 COUNT5 TEMPϕ3
8 DAOFWK VOLDW1 SPBUF PTRS VODAYL COUNT6 TEMPϕ4
9 HOUR VOLDW 2 PTRS+1 VODAYL+1 TEMPϕ5
A MINUTE VOLDW 3 LENDAY VODAYS INDEX TEMPϕ6
B SECOND VOLDW 4 LNDAY1 OC1OCM VODAYS+1 INDEX+1 TEMPϕ7
C VOLDW 5 LNDAY1+1 DETER1 OC1OCL DATAϕM DATAϕL AR1MOM
D VOLDW6 LNBUF1 DETER2 PTR DATA1M DATA1L AR1MOL
E VOLDW7 MRAM LNBUF1+1 DETER3 PTR+1 DETINM DETINL AR1MVM
F VOLDW8 DAYMAX DETER4 CYCLE STCHGM STCHGL AR1MVL
0 1 2 3 4 5 6 7 8 9 A B C D F

Figure 2.2/ Detailed RAM ϕϕxy Organization

PARAMETER	ADDRESS	VALUE
NLANE1	10	3
NLANE2	11	3
LDESW1	12	7
LDESW2	13	7
LDNW1	14	7
LDNW2	15	7
NVOL1	16	2
NVOL2	17	2
VOLDW1	18	3
VOLDW2	19	4
VOLDW3	1A	3
VOLDW4	1B	4
VOLDW5	1C	0
VOLDW6	1D	0
VOLDW7	1E	0
VOLDW8	1F	0

Figure 2.3/ Lane and Detector Configuration



SINCE: MAXIMUM OCCUPANCY FOR 1 MIN IS 60 X 60 = 3600

THEREFORE: 1792 ÷ 3600 x 100 = 49.7%

Figure 2.4/ Occupancy Limit Threshold

APPENDIX A

PAGE

EQUATE FILE 161

PROGRAM LISTING 162

CROSS-REFERENCE TABLE 193

```
00001          0000  A PCSCAD EQU   $00
00002          0003  A YEAR   EQU   $03
00003          0004  A MONTH  EQU   $04
00004          0005  A DAOFMO EQU   $05
00005          0008  A DAOFWK EQU   $08
00006          0009  A HR     EQU   $09
00007                *
00008          0010  A NLANE1 EQU   $10
00009          0011  A NLANE2 EQU   $11
00010          0012  A LDESW1 EQU   $12
00011          0013  A LDESW2 EQU   $13
00012          0014  A LDNW1  EQU   $14
00013          0015  A LDNW2  EQU   $15
00014          0016  A NVOL1  EQU   $16
00015          0017  A NVOL2  EQU   $17
00016          0018  A VOLDW1 EQU   $18
00017                *
00018          006E  A MRAM   EQU   $6E
00019                *
00020          008C  A DETER1 EQU   $8C
00021          008D  A DETER2 EQU   $8D
00022          008E  A DETER3 EQU   $8E
00023          008F  A DETER4 EQU   $8F
00024                *
00025          0070  A VOLDAY EQU   $70
00026          0071  A WW     EQU   $71
00027          0091  A VODAY1 EQU   $91
00028          0073  A VOBUF1 EQU   $73
00029          0075  A SPDDAY EQU   $75
00030          0076  A SPDAY1 EQU   $76
00031          0078  A SPBUF  EQU   $78
00032          007A  A LENDAY EQU   $7A
00033          007B  A LNDAY1 EQU   $7B
00034          007D  A LNBUF1 EQU   $7D
00035          007F  A DAYMAX EQU   $7F
00036          0095  A SIZE   EQU   $95
00037          0096  A PTRL   EQU   $96
00038          0098  A PTRS   EQU   $98
00039          009B  A OC10CM EQU   $9B
00040          009C  A OC10CL EQU   $9C
00041          009D  A PTR    EQU   $9D
00042                *
00043          009F  A CYCLE  EQU   $9F
00044                *
00045          00A0  A SPC1   EQU   $A0
00046          00A1  A SPC2   EQU   $A1
00047          00A2  A KAY2   EQU   $A2
00048          00A3  A TRUCK  EQU   $A3
00049          00A4  A LENGTH EQU   $A4
00050          00A6  A SPEED  EQU   $A6
00051          00A8  A VODAYL EQU   $A8
00052          00AA  A VODAYS EQU   $AA
00053          00AC  A DATA0M EQU   $AC
00054          00AD  A DATA1M EQU   $AD
00055          00AE  A DETINM EQU   $AE
00056          00AF  A STCHGM EQU   $AF
00057                *
00058          00B0  A GO     EQU   $B0
```



```
00059          00B1  A GOT    EQU   $B1
00060          00B2  A GOA    EQU   $B2
00061          00B3  A GOTA   EQU   $B3
00062                *
00063          00BC  A DATA0L EQU   $BC
00064          00BD  A DATA1L EQU   $BD
00065          00BE  A DETINL EQU   $BE
00066          00BF  A STCHGL EQU   $BF
00067          00C0  A DTCTRM EQU   $C0
00068                *
00069          00E3  A COUNT1 EQU   $E3
00070          00E4  A COUNT2 EQU   $E4
00071          00E5  A COUNT3 EQU   $E5
00072          00E6  A COUNT4 EQU   $E6
00073          00E7  A COUNT5 EQU   $E7
00074          00E8  A COUNT6 EQU   $E8
00075          00EA  A INDEX  EQU   $EA
00076          00EC  A AR1HDM EQU   $EC
00077          00ED  A AR1HOL EQU   $ED
00078          00EE  A AR1MVM EQU   $EE
00079          00EF  A AR1MVL EQU   $EF
00080          00D0  A DTCTRL EQU   $D0
00081                *
00082          00F2  A XLANE  EQU   $F2
00083          00F3  A PCW1   EQU   $F3
00084          00F4  A KAY1   EQU   $F4
00085          00F5  A TEMP01 EQU   $F5
00086          00F6  A TEMP02 EQU   $F6
00087          00F7  A TEMP03 EQU   $F7
00088          00F8  A TEMP04 EQU   $F8
00089          00F9  A TEMP05 EQU   $F9
00090          00FA  A TEMP06 EQU   $FA
00091          00FB  A TEMP07 EQU   $FB
00092                *
00093          0000  A OSIX1  EQU   $00
00094          0001  A VSIX1  EQU   $1
00095          0002  A OCMN1M EQU   $2
00096          0003  A OCMN1L EQU   $3
00097          0004  A VMN1   EQU   $4
00098          0005  A OCC1M  EQU   $5
00099          0006  A OCC1L  EQU   $6
00100          0007  A VOL1   EQU   $7
00101          0008  A VD1M   EQU   $8
00102          0009  A VD1L   EQU   $9
00103          000A  A DET1   EQU   $A
00104          000B  A STCHG1 EQU   $B
00105          000C  A LND1S1 EQU   $C
00106          000D  A LENM   EQU   $D
00107          000E  A LENL   EQU   $E
00108          000F  A OCC    EQU   $F
00109                *
00110          0000  A B1E    EQU   $0
00111          0001  A B1S    EQU   $1
00112          0002  A B2E    EQU   $2
00113          0003  A B2S    EQU   $3
00114          0004  A L3     EQU   $4
00115          0005  A LSA    EQU   $5
00116          0006  A LD     EQU   $6
```

```
00117          0007  A LDA    EQU    $7
00118          0008  A C1E    EQU    $8
00119          0009  A C1S    EQU    $9
00120          000A  A C2E    EQU    $A
00121          000B  A C2S    EQU    $B
00122          0080  A SPD    EQU    $80
00123          0090  A REM    EQU    $90
00124          00A0  A SPED   EQU    $A0
00125                *
00126          0400  A START  EQU    $400
00127                *
00128                * LANE PROPORTIONING CONSTANTS
00129                *
00130          0000  A PCLN1  EQU    0
00131          0080  A PCLN2  EQU    128
00132          00AB  A PCLN3  EQU    171
00133          00C0  A PCLN4  EQU    192
00134          00CD  A PCLN5  EQU    205
00135          00D5  A PCLN6  EQU    213
00136          00DB  A PCLN7  EQU    219
00137          00E0  A PCLN8  EQU    224
00138                *
00139                * FLAG BITS
00140                *
00141          0001  A TBIT0  EQU    $01
00142          0002  A TBIT1  EQU    $02
00143          0004  A TBIT2  EQU    $04
00144          0008  A TBIT3  EQU    $08
00145          0010  A TBIT4  EQU    $10
00146          0020  A TBIT5  EQU    $20
00147          0040  A TBIT6  EQU    $40
00148          0080  A TBIT7  EQU    $80
00149                *
00150                * SUBROUTINE ADDRESSES
00151                *
00152          C000  A CMP16  EQU    $C000
00153          C030  A NEXTLN EQU    $C030
00154          C060  A SETUP  EQU    $C060
00155          C080  A PRPRT8 EQU    $C080
00156          C0B0  A PRPRT  EQU    $C0B0
00157          D000  A INIT   EQU    $D000
00158          D250  A HEADER EQU    $D250
00159          C2A0  A INPUT  EQU    $C2A0
00160          C350  A PCS2   EQU    $C350
00161          D4A0  A PCS3   EQU    $D4A0
00162          C400  A PCS4   EQU    $C400
00163          C4A0  A PCS5   EQU    $C4A0
00164          C550  A PCS6   EQU    $C550
00165          C6A0  A PCS7   EQU    $C6A0
00166          C840  A PCS4A  EQU    $C840
00167          C8D0  A PCS5A  EQU    $C8D0
00168          C950  A PCS6A  EQU    $C950
00169          C9B0  A MULT   EQU    $C9B0
00170          C9E0  A DIV    EQU    $C9E0
00171          CA00  A INPUTT EQU    $CA00
00172          D550  A PCS3A  EQU    $D550
00173          CBB0  A PCS3B  EQU    $CBB0
00174          CC00  A PCS3C  EQU    $CC00
```



```
00175          CC50  A PCS8   EQU    $CC50
00176          CDA0  A PCS8A  EQU    $CDA0
00177          CF00  A PCS7A  EQU    $CF00
00178                *
00179                * INPUT PORTS
00180                *
00181          5001  A PORT1  EQU    $5001    DETECTORS #1-#8 FOR DIRECTION ONE
00182          5002  A PORT2  EQU    $5002    DETECTORS #9-#16 FOR DIRECTION ONE
00183          5003  A PORT3  EQU    $5003    DETECTORS #1-#8 FOR DIRECTION TWO
00184          5006  A PORT6  EQU    $5006    DETECTORS #9-#16 FOR DIRECTION TWO
00185
00186                *
00187                *         MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
00188                *
00189                * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
00190                * CALTRANS TO M.T.C. MODIFIED, RELEASE 1.0
00191                *
00192                * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
00193                *
00194                *      1981 08 25
00195                *
00196                *    RELEASE LEVEL 6.75
00197                *
00198                *       NAM    SUB
00199                *
00200                * CMP16. AS REV. 1.50
00201                * STEVEN SKELTON
00202                *
00203                * CMP16 IS A GENERALIZED SUBROUTINE TO COMPARE
00204                * TWO 16 BIT NUMBERS.
00205                *
00206                * CALLING SEQUENCE
00207                *
00208                *     1. A 16 BIT NUMBER IS STORED @ TEMP02(MSB) & TEMP03(LSB)
00209                *     2. THE X REGISTER IS POINTED TOWARDS TWO LOCATIONS
00210                *        (M=MSB;M+1=LSB)
00211                *     3. JSR CMP16
00212                *
00213                * THE ROUTINE WILL RETURN TO CALLER WITH:
00214                *    1. CARRY SET IF (M,M+1)>(TEMP02,03)
00215                *    2. CARRY CLEAR OTHERWISE
00216                *
00217                *         MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 2
00218                *
00219A C000                      ORG    CMP16
00220                *
00221A C000 36                   PSHA          SAVE A
00222A C001 A6 00     A          LDAA   0,X    GET INDEXED MSB
00223A C003 91 F6     A          CMPA   TEMP02 > MEMORY MSB?
00224A C005 22 0B C012           BHI    ONEBIG YES -- SET (INDEXED LOC) > (TEMP LOC) FLAG
00225A C007 26 06 C00F           BNE    ONESML NO, SMALLER -- CLEAR FLAG
00226A C009 A6 01     A          LDAA   1,X    GET INDEXED LSB
00227A C00B 91 F7     A          CMPA   TEMP03 > MEMORY LSB
00228A C00D 22 03 C012           BHI    ONEBIG YES -- SET FLAG
00229A C00F 0C                ONESML CLC           CLEAR FLAG
00230A C010 32                   PULA
00231A C011 39                   RTS
00232A C012 0D                ONEBIG SEC           SET THE FLAG
```

```
PAGE  005  TRY      .SA:1  SUB

00233A C013 32                PULA
00234A C014 39                RTS
00235                      *
00236                      * NEXTLN SUBROUTINE
00237                      *
00238                      * CORRECT INDEXES FOR NEXT MAIN LANE DATA, CHECK FOR LAST LANE
00239                      *
00240A C030                         ORG    NEXTLN
00241A C030 36                      PSHA               SAVE ACC. A
00242A C031 96 EB     A             LDAA   INDEX+1     GET MAIN LANE LSB INDEX -- LAST LANE?
00243A C033 27 09 C03E              BEQ    LSTLN       YES
00244A C035 80 10     A             SUBA   #$10        MOVE INDEX TO NEXT LANE
00245A C037 97 EB     A             STAA   INDEX+1     STORE IT
00246A C039 32                      PULA               RESTORE A
00247A C03A DE EA     A             LDX    INDEX       RESET X REG
00248A C03C 0C                      CLC                CLEAR LAST LANE FLAG
00249A C03D 39                      RTS
00250A C03E 32              LSTLN   PULA               RESTORE A
00251A C03F 0D                      SEC                SET LAST LANE FLAG
00252A C040 39                      RTS
00253                      *
00254                      *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 3
00255                      *
00256                      *                      SETUP SUBROUTINE
00257                      *
00258                      * SET DATA INDEXES FOR MAIN LANE DATA ACCESS
00259                      *
00260A C060                         ORG    SETUP
00261A C060 CE 0170   A             LDX    #$0170      SET INDEX AT HIGHEST LANE - 1
00262A C063 DF EA     A             STX    INDEX       & SAVE IT
00263A C065 39                      RTS
00264                      *
00265                      *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
00266                      *
00267                      * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
00268                      *        COPYRIGHT 1974 BY MOTOROLA INC
00269                      *
00270                      * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
00271                      * CALTRANS DISTRICT 11 MODIFIED, RELEASE 1.7
00272                      *
00273                      * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
00274                      *
00275                      *           10/ 4/1979        15:  6: 4:
00276                      *
00277                      *     RELEASE LEVEL 6.75
00278                      *
00279                               NAM    PRPRT
00280                      *
00281                      * PRPRT.AS  REV. 6.0
00282                      * 2/27/76
00283                      *
00284                      * THIS SUB-ROUTINE PERFORMS THE OPERATION
00285                      *
00286                      *      N=N(1-PCW/256)
00287                      *
00288                      * WHERE
00289                      *
00290                      *       N=A 8 OR 16 BIT NUMBER POINTED TO BY (X) OR (X), (X+1)
```

```
00291                    *       PCW=PROPORTION OF N TO BE SUBTRACTED
00292                    *
00293                    * CALLING SEQUENCE
00294                    *
00295                    *       PLACE PCW IN ACCA
00296                    *
00297                    *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 2
00298                    *
00299                    * SET THE INDEX REGISTER TO POINT TO N OR N - MSB
00300                    * JSR PRPRT8 OR PRPRT
00301                    *
00302                    * ON RETURN (ACCA)=PROPORTION OF N REQUIRED - MSB
00303                    * AND (ACCB)=PROPORTION OF N REQUIRED - LSB
00304                    *
00305A C080                      ORG     PRPRT8
00306                    *
00307A C080 36                   PSHA            PCW ON STACK
00308A C081 E6 00     A          LDAB    X       ORIGINAL VALUE
00309A C083 4F                   CLRA            CLEAR MSB
00310A C084 20 2F C0B5           BRA     P10     ON WITH PROGRAM
00311                    *
00312A C0B0                      ORG     PRPRT
00313A C0B0 36                   PSHA            PCW ON STACK
00314A C0B1 A6 00     A          LDAA    X       ORIGINAL VALUE - MSB
00315A C0B3 E6 01     A          LDAB    1,X     ORIGINAL VALUE - LSB
00316A C0B5 36           P10     PSHA            PUT ON STACK
00317A C0B6 37                   PSHB            PUT ON STACK
00318A C0B7 34                   DES             SPACE FOR ROUND-OFF FLAG
00319A C0B8 30                   TSX             POINT INDEX REG. TO STACKED DATA
00320                    *
00321                    * THE STACK NOW LOOKS LIKE THIS!
00322                    *
00323                    *  +0  ROUND OFF FLAG
00324                    *  +1  ORIGINAL VALUE - LSB
00325                    *  +2  ORIGINAL VALUE - MSB
00326                    *  +3  PROPORTION CONTROL WORD
00327                    *
00328A C0B9 6F 00     A AGAIN  CLR     0,X     CLEAR ROUND OFF FLAG
00329                    *
00330                    *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 3
00331                    *
00332A C0BB 64 02     A          LSR     2,X     SHIFT MSB
00333A C0BD 66 01     A          ROR     1,X     SHIFT LSB
00334A C0BF 24 02 C0C3           BCC     P1      IF NO CARRY, GO ON
00335A C0C1 6C 00     A          INC     0,X     SET ROUND-OFF FLAG
00336                    *
00337A C0C3 68 03     A P1       ASL     3,X     CHECK FOR PCW BIT SET
00338A C0C5 24 0D C0D4           BCC     CHECK   IF NO BIT SET, DON'T SUBTRACT
00339A C0C7 E0 01     A          SUBB    1,X     SUBTRACT PROPORTION - LSB
00340A C0C9 A2 02     A          SBCA    2,X     SUBTRACT PROPORTION - MSB
00341A C0CB 6D 00     A          TST     0,X     IS ROUND-OFF FLAG SET?
00342A C0CD 27 05 C0D4           BEQ     CHECK   IF NOT, CHECK TO SEE IF RETURN
00343A C0CF C0 01     A          SUBB    #01     SUBTRACT ONE FROM LSB
00344A C0D1 24 01 C0D4           BCC     CHECK   IF NO OVERFLOW, CHECK ON RETURN
00345A C0D3 4A                   DECA            SUBTRACT OVERFLOW FROM MSB
00346                    *
00347A C0D4 6D 03     A CHECK    TST     3,X     CHECK PCW FOR ANY BIT SET!
00348A C0D6 26 E1 C0B9           BNE     AGAIN   IF ONE MORE BIT SET, GO BACK THROUGH
```

```
00349A C0B8 31                  INS
00350A C0B9 31                  INS
00351A C0BA 31                  INS
00352A C0BB 31                  INS
00353A C0BC 39                  RTS
00354                    *
00355                    *          MOTOROLA M68SAM CROSS-ASSMBLER PAGE 1
00356                    *
00357                    * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
00358                    * COPYRIGHT 1974 BY MOTOROLA INC
00359                    *
00360                    * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
00361                    * WRITTEN BY M.T.C. , RELEASE 2.0
00362                    *
00363                    * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
00364                    *
00365                    *       1982 03 17
00366                    *
00367                    *    RELEASE LEVEL 6.75
00368                    *
00369                           NAM    MATH
00370                    *
00371                    * MATH AS  REV. 0.00
00372                    * STEVEN SKELTON
00373                    *
00374                    * THIS ROUTINE PROVIDES SUBROUTINES FOR MULTIPLICATION AND DIVISION.
00375                    *
00376                    * MULTIPLIER AND MULTIPLICAND ARE ASSIGNED TO TEMP04,TEMP05.
00377                    * THE PRODUCT IS ASSIGNED TO:
00378                    *                                  (A) MSB ==> TEMP06
00379                    *                                  (B) LSB ==> TEMP07
00380                    *
00381A C9B0                     ORG    MULT
00382                    *
00383A C9B0 4F                  CLRA
00384A C9B1 5F                  CLRB
00385A C9B2 CE 0008  A          LDX    #8
00386A C9B5 58          MM1     ASLB
00387A C9B6 49                  ROLA
00388A C9B7 78 00F8  A          ASL    TEMP04
00389A C9BA 24 04 C9C0          BCC    MM2
00390A C9BC DB F9    A          ADDB   TEMP05
00391A C9BE 89 00    A          ADCA   #0
00392A C9C0 09          MM2     DEX
00393A C9C1 26 F2 C9B5          BNE    MM1
00394A C9C3 97 FA    A          STAA   TEMP06
00395A C9C5 D7 FB    A          STAB   TEMP07
00396A C9C7 39                  RTS
00397                    *
00398                    *
00399                    * THE DIVISOR AND DIVIDEND ARE ASSIGNED TO TEMP04,TEMP05 RESPECTIVLY.
00400                    * WHILE THE QUOTIENT IS TEMP06 AND ANY REMAINDER IS IN TEMP07.
00401                    *
00402                    *
00403A C9E0                     ORG    DIV
00404                    *
00405A C9E0 CE 0008  A          LDX    #8
00406A C9E3 4F                  CLRA
```

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PAGE  008  TRY      .SA:1  MATH

00407A C9E4 D6 F9     A         LDAB    TEMP05
00408A C9E6 58          MD1     ASLB
00409A C9E7 49                  ROLA
00410A C9E8 91 F8     A         CMPA    TEMP04
00411A C9EA 25 03 C9EF          BCS     MD2
00412A C9EC 90 F8     A         SUBA    TEMP04
00413A C9EE 5C                  INCB
00414A C9EF 09          MD2     DEX
00415A C9F0 26 F4 C9E6          BNE     MD1
00416A C9F2 D7 FA     A         STAB    TEMP06
00417A C9F4 97 F8     A         STAA    TEMP07
00418A C9F6 39                  RTS
00419                   *
00420                   *         MOTOROLA M68SAM (NMOS-ASSEMBLER PAGE 1
00421                   *
00422                   * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
00423                   * WRITTEN BY M.T.C. , RELEASE 2.0
00424                   *
00425                   * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
00426                   *
00427                   *       1981 08 26
00428                   *
00429                   *     RELEASE LEVEL 6.75
00430                   *
00431                           NAM     START
00432                   *
00433                   * START. AS REV. 1.00
00434                   * STEVEN SKELTON
00435                   *
00436A D000                     ORG     INIT
00437                   *
00438                   *'START' IS AN INITIALISING ROUTINE WITH THREE FUNCTIONS
00439                   *
00440                   *       (1) TO ZERO MEMORY
00441                   *       (2) TO DEFINE AND CALCULATE VARIABLES
00442                   *       (3) AND TO OUTPUT THE FIRST HEADER
00443                   *
00444A D000 CE 008C   A         LDX     #$8C
00445A D003 4F                  CLRA
00446A D004 A7 00     A B1      STAA    0,X
00447A D006 08                  INX
00448                   *
00449                   *SMALL MEMORY ZEROING
00450                   *
00451A D007 DF F5     A         STX     TEMP01
00452A D009 D6 F5     A         LDAB    TEMP01
00453A D00B C0 07     A         SUBB    #$07
00454A D00D 26 F5 D004          BNE     B1
00455A D00F D6 F6     A         LDAB    TEMP02
00456A D011 C0 DF     A         SUBB    #$DF
00457A D013 26 EF D004          BNE     B1
00458                   *
00459A D015 CE 0100   A         LDX     #$100
00460A D018 86 01     A         LDAA    #$01
00461A D01A 95 12     A C10     BITA    LDESW1
00462A D01C 26 02 D020          BNE     C13
00463A D01E A7 0C     A         STAA    LNDIS1,X
00464A D020 DF F5     A C13     STX     TEMP01
```

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PAGE  009  TRY      .SA:1  START

00465A D022 C6 10     A         LDAB    #$10
00466A D024 DB F6     A         ADDB    TEMP02
00467A D026 D7 F6     A         STAB    TEMP02
00468A D028 DE F5     A         LDX     TEMP01
00469A D02A 48                  ASLA
00470A D02B 24 ED D01A          BCC     C10
00471                   *
00472A D02D CE 0100   A         LDX     #$100
00473A D030 86 01     A         LDAA    #$01
00474A D032 95 13     A C12     BITA    LDESW2
00475A D034 26 02 D038          BNE     C11
00476A D036 A7 8C     A         STAA    LNDIS1+$80,X
00477A D038 DF F5     A C11     STX     TEMP01
00478A D03A C6 10     A         LDAB    #$10
00479A D03C DB F6     A         ADDB    TEMP02
00480A D03E D7 F6     A         STAB    TEMP02
00481A D040 DE F5     A         LDX     TEMP01
00482A D042 48                  ASLA
00483A D043 24 ED D032          BCC     C12
00484                   *
00485                   * VARIABLE DEFINITION
00486                   *
00487A D045 96 12     A RET     LDAA    LDESW1
00488A D047 97 C0     A         STAA    DTCTRM
00489A D049 96 12     A         LDAA    LDESW1
00490A D04B 97 E0     A         STAA    DTCTRM+$20
00491A D04D 96 13     A         LDAA    LDESW2
00492A D04F 97 D0     A         STAA    DTCTRL
00493A D051 96 13     A         LDAA    LDESW2
00494A D053 97 F0     A         STAA    DTCTRL+$20
00495A D055 86 01     A         LDAA    #$01
00496A D057 97 70     A         STAA    VOLDAY
00497A D059 97 E6     A         STAA    COUNT4
00498A D05B 97 75     A         STAA    SPDDAY
00499A D05D 97 7A     A         STAA    LENDAY
00500A D05F 97 9F     A         STAA    CYCLE
00501A D061 97 F4     A         STAA    KAY1
00502A D063 97 A2     A         STAA    KAY2
00503A D065 86 1A     A         LDAA    #$1A
00504A D067 97 F3     A         STAA    PCW1
00505A D069 7F 0073   A         CLR     VOBUF1
00506A D06C CE 0300   A         LDX     #$300
00507A D06F DF 76     A         STX     SPDAY1
00508A D071 CE 0028   A         LDX     #$0028
00509A D074 DF 78     A         STX     SPBUF
00510A D076 86 07     A         LDAA    #$07
00511A D078 97 9B     A         STAA    OC10CM
00512A D07A CE 0300   A         LDX     #$0300
00513A D07D DF A6     A         STX     SPEED
00514                   *
00515A D07F 86 AC     A         LDAA    #$AC
00516A D081 97 A3     A         STAA    TRUCK
00517A D083 86 05     A         LDAA    #$05
00518A D085 97 7F     A         STAA    DAYMAX
00519                   *
00520A D087 CE 0200   A         LDX     #$200
00521A D08A 86 0F     A         LDAA    #$0F
00522A D08C C6 30     A         LDAB    #$30
```

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PAGE  010  TRY      .SA:1  START

00523A D08E A7 80     A         STAA   SPD,X
00524A D090 E7 90     A         STAB   SPD+$10,X
00525                   *
00526A D092 4A                  DECA
00527A D093 C6 24     A         LDAB   #$24
00528A D095 A7 81     A         STAA   SPD+1,X
00529A D097 E7 91     A         STAB   SPD+$11,X
00530                   *
00531A D099 4A                  DECA
00532A D09A C6 18     A         LDAB   #$18
00533A D09C A7 82     A         STAA   SPD+2,X
00534A D09E E7 92     A         STAB   SPD+$12,X
00535                   *
00536A D0A0 4A                  DECA
00537A D0A1 C6 0C     A         LDAB   #$0C
00538A D0A3 A7 83     A         STAA   SPD+3,X
00539A D0A5 A7 93     A         STAA   SPD-$13,X
00540                   *
00541A D0A7 4A                  DECA
00542A D0AB 4A                  DECA
00543A D0A9 C6 16     A         LDAB   #$16
00544A D0AB A7 84     A         STAA   SPD+4,X
00545A D0AD E7 94     A         STAB   SPD+$14,X
00546                   *
00547A D0AF 4A                  DECA
00548A D0B0 C6 29     A         LDAB   #$29
00549A D0B2 A7 85     A         STAA   SPD+5,X
00550A D0B4 E7 95     A         STAB   SPD+$15,X
00551                   *
00552A D0B6 4A                  DECA
00553A D0B7 C6 1D     A         LDAB   #$1D
00554A D0B9 A7 86     A         STAA   SPD+6,X
00555A D0BB E7 96     A         STAB   SPD+$16,X
00556                   *
00557A D0BD 4A                  DECA
00558A D0BE C6 12     A         LDAB   #$12
00559A D0C0 A7 87     A         STAA   SPD+7,X
00560A D0C2 E7 97     A         STAB   SPD+$17,X
00561                   *
00562A D0C4 4A                  DECA
00563A D0C5 C6 06     A         LDAB   #$6
00564A D0C7 A7 88     A         STAA   SPD+8,X
00565A D0C9 E7 98     A         STAB   SPD+$18,X
00566                   *
00567A D0CB 4A                  DECA
00568A D0CC 4A                  DECA
00569A D0CD C6 36     A         LDAB   #$36
00570A D0CF A7 89     A         STAA   SPD+9,X
00571A D0D1 E7 99     A         STAB   SPD+$19,X
00572                   *
00573A D0D3 4A                  DECA
00574A D0D4 C6 24     A         LDAB   #$24
00575A D0D6 A7 8A     A         STAA   SPD+$A,X
00576A D0D8 E7 9A     A         STAB   SPD+$1A,X
00577                   *
00578A D0DA C6 10     A         LDAB   #$10
00579A D0DC CE 0200   A         LDX    #$0200
00580A D0DF 86 D0     A         LDAA   #$D0
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PAGE  011  TRY      .SA:1  START

00581A D0E1 A7 04     A C88     STAA   LS,X
00582A D0E3 A7 05     A         STAA   LSA,X
00583A D0E5 DF F5     A         STX    TEMP01
00584A D0E7 DB F6     A         ADDB   TEMP02
00585A D0E9 D7 F6     A         STAB   TEMP02
00586A D0EB C6 10     A         LDAB   #$10
00587A D0ED DE F5     A         LDX    TEMP01
00588A D0EF 8C 0280   A         CPX    #$0280
00589A D0F2 26 ED D0E1          BNE    C88
00590                   *
00591A D0F4 CE 0200   A         LDX    #$0200
00592A D0F7 86 30     A         LDAA   #$30
00593A D0F9 A7 06     A C87     STAA   LD,X
00594A D0FB A7 07     A         STAA   LDA,X
00595A D0FD DF F5     A         STX    TEMP01
00596A D0FF DB F6     A         ADDB   TEMP02
00597A D101 D7 F6     A         STAB   TEMP02
00598A D103 C6 10     A         LDAB   #$10
00599A D105 DE F5     A         LDX    TEMP01
00600A D107 8C 0280   A         CPX    #$0280
00601A D10A 26 ED D0F9          BNE    C87
00602                   *
00603                   * VARIABLE COMPUTATION
00604                   *
00605A D10C 4F                  CLRA
00606A D10D 97 F5     A         STAA   TEMP01
00607A D10F D6 18     A         LDAB   VOLDW1
00608A D111 27 01 D114          BEQ    C2
00609A D113 4C                  INCA
00610A D114 D6 19     A C2      LDAB   VOLDW1+1
00611A D116 27 01 D119          BEQ    C3
00612A D118 4C                  INCA
00613A D119 D6 1A     A C3      LDAB   VOLDW1+2
00614A D11B 27 01 D11E          BEQ    C4
00615A D11D 4C                  INCA
00616A D11E D6 1B     A C4      LDAB   VOLDW1+3
00617A D120 27 01 D123          BEQ    C5
00618A D122 4C                  INCA
00619A D123 D6 1C     A C5      LDAB   VOLDW1+4
00620A D125 27 01 D128          BEQ    C6
00621A D127 4C                  INCA
00622A D128 D6 1D     A C6      LDAB   VOLDW1+5
00623A D12A 27 01 D12D          BEQ    C7
00624A D12C 4C                  INCA
00625A D12D D6 1E     A C7      LDAB   VOLDW1+6
00626A D12F 27 01 D132          BEQ    C18
00627A D131 4C                  INCA
00628A D132 D6 1F     A C18     LDAB   VOLDW1+7
00629A D134 27 01 D137          BEQ    C19
00630A D136 4C                  INCA
00631A D137 48          C19     ASLA
00632A D138 97 95     A         STAA   SIZE
00633                   *
00634A D13A 48                  ASLA
00635A D13B 48                  ASLA
00636A D13C 48                  ASLA
00637A D13D 97 F5     A         STAA   TEMP01
00638A D13F 9B F5     A         ADDA   TEMP01
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00639A D141 0C                      CLC
00640A D142 99 F5    A              ADCA   TEMP01
00641A D144 24 04 D14A              BCC    C9
00642A D146 C6 01    A              LDAB   ##01
00643A D148 D7 73    A              STAB   VOBUF1
00644A D14A 8B 04    A C9           ADDA   #04
00645A D14C 97 74    A              STAA   VOBUF1+1
00646                  *
00647A D14E D6 73    A              LDAB   VOBUF1
00648A D150 D7 F8    A              STAB   TEMP04
00649A D152 C6 05    A              LDAB   #5
00650A D154 D7 F9    A              STAB   TEMP05
00651A D156 BD C9B0  A              JSR    MULT
00652A D159 D6 FB    A              LDAB   TEMP07
00653A D15B D7 F7    A              STAB   TEMP03
00654A D15D 96 74    A              LDAA   VOBUF1+1
00655A D15F 97 F8    A              STAA   TEMP04
00656A D161 BD C9B0  A              JSR    MULT
00657A D164 96 FB    A              LDAA   TEMP07
00658A D166 97 A5    A              STAA   LENGTH+1
00659A D168 D6 F7    A              LDAB   TEMP03
00660A D16A DB FA    A              ADDB   TEMP06
00661A D16C CB 04    A              ADDB   #04      COMPENSATE FOR #START BEING 0400
00662A D16E D7 A4    A              STAB   LENGTH
00663                  *
00664A D170 DE 73    A              LDX    VOBUF1
00665A D172 DF 7D    A              STX    LNBUF1
00666A D174 CE 0400  A              LDX    #START
00667A D177 DF 91    A              STX    VODAY1
00668A D179 DF 71    A              STX    WW
00669                  *
00670A D17B 08                      INX
00671A D17C 08                      INX
00672A D17D 08                      INX
00673A D17E 08                      INX
00674A D17F DF 9D    A              STX    PTR
00675                  *
00676A D181 DE A4    A              LDX    LENGTH
00677A D183 DF A8    A              STX    VODAYL
00678A D185 DF 7B    A              STX    LNDAY1
00679A D187 08                      INX
00680A D188 08                      INX
00681A D189 08                      INX
00682A D18A 08                      INX
00683A D18B DF 96    A              STX    PTRL
00684                  *
00685A D18D DE A6    A              LDX    SPEED
00686A D18F DF AA    A              STX    VODAYS
00687A D191 08                      INX
00688A D192 08                      INX
00689A D193 08                      INX
00690A D194 08                      INX
00691A D195 DF 98    A              STX    PTRS
00692                  *
00693                  * INITIAL HEADER
00694                  *
00695A D197 DE 91    A              LDX    VODAY1
00696A D199 96 03    A              LDAA   YEAR
```



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00697A D19B A7 00    A              STAA   0,X
00698A D19D 96 04    A              LDAA   MONTH
00699A D19F A7 01    A              STAA   1,X
00700A D1A1 96 05    A              LDAA   DAOFMO
00701A D1A3 A7 02    A              STAA   2,X
00702A D1A5 96 08    A              LDAA   DAOFWK
00703A D1A7 A7 03    A              STAA   3,X
00704                  *
00705A D1A9 DE A8    A              LDX    VODAYL
00706A D1AB 96 03    A              LDAA   YEAR
00707A D1AD A7 00    A              STAA   0,X
00708A D1AF 96 04    A              LDAA   MONTH
00709A D1B1 A7 01    A              STAA   1,X
00710A D1B3 96 05    A              LDAA   DAOFMO
00711A D1B5 A7 02    A              STAA   2,X
00712A D1B7 96 08    A              LDAA   DAOFWK
00713A D1B9 A7 03    A              STAA   3,X
00714                  *
00715A D1BB DE AA    A              LDX    VODAYS
00716A D1BD 96 03    A              LDAA   YEAR
00717A D1BF A7 00    A              STAA   0,X
00718A D1C1 96 04    A              LDAA   MONTH
00719A D1C3 A7 01    A              STAA   1,X
00720A D1C5 96 05    A              LDAA   DAOFMO
00721A D1C7 A7 02    A              STAA   2,X
00722A D1C9 96 08    A              LDAA   DAOFWK
00723A D1CB A7 03    A              STAA   3,X
00724                  *
00725A D1CD 39                      RTS
00726                  *
00727                  *          MOTOROLA M68SAM CROSS-ASSMBLER PAGE 1
00728                  *
00729                  * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
00730                  * WRITTEN BY M.T.C. , RELEASE 2.0
00731                  *
00732                  * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
00733                  *
00734                  *       1981 08 26
00735                  *
00736                  *    RELEASE LEVEL 6.75
00737                  *
00738                          NAM    HEADER
00739                  *
00740                  * HEADER, AS REV. 1.00
00741                  *
00742                  *STEVEN SKELTON
00743                  *
00744                  *'HEADER' PROVIDES THE DAY, DATA, AND HEADER INFORMATION
00745                  *
00746A D250                         ORG    HEADER
00747                  *
00748A D250 C6 0C    A              LDAB   ##0C
00749A D252 D7 F7    A              STAB   TEMP03
00750A D254 CE 0200  A              LDX    ##200
00751A D257 DF FA    A              STX    TEMP06
00752A D259 A6 A0    A H31          LDAA   SPED,X
00753A D25B 6F A0    A              CLR    SPED,X
00754A D25D DE 98    A              LDX    PTRS
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00755A D25F A7 00    A        STAA   0,X
00756A D261 7C 0099  A        INC    PTRS+1
00757                *
00758A D264 DE FA    A        LDX    TEMP06
00759A D266 A6 B0    A        LDAA   SPED+$10,X
00760A D268 6F B0    A        CLR    SPED+$10,X
00761A D26A DE 98    A        LDX    PTRS
00762A D26C A7 00    A        STAA   0,X
00763A D26E 7C 0099  A        INC    PTRS+1
00764                *
00765A D271 DE FA    A        LDX    TEMP06
00766A D273 A6 C0    A        LDAA   SPED+$20,X
00767A D275 6F C0    A        CLR    SPED+$20,X
00768A D277 DE 98    A        LDX    PTRS
00769A D279 A7 00    A        STAA   0,X
00770                *
00771A D27B 7A 00F7  A        DEC    TEMP03
00772A D27E 7D 00F7  A        TST    TEMP03
00773A D281 27 0A D28D        BEQ    H30
00774A D283 7C 00F8  A        INC    TEMP07
00775A D286 7C 0099  A        INC    PTRS+1
00776A D289 DE FA    A        LDX    TEMP06
00777A D28B 20 CC D259        BRA    H31
00778                *
00779A D28D 0C               H30   CLC
00780                *
00781A D28E 96 9F    A        LDAA   CYCLE
00782A D290 4C                INCA
00783A D291 97 9F    A        STAA   CYCLE
00784A D293 96 70    A        LDAA   VOLDAY
00785A D295 80 05    A        SUBA   #$05
00786A D297 27 08 D2A1        BEQ    H9
00787A D299 96 9F    A        LDAA   CYCLE
00788A D29B 97 70    A        STAA   VOLDAY
00789A D29D 97 75    A        STAA   SPDDAY
00790A D29F 97 7A    A        STAA   LENDAY
00791A D2A1 96 9F    A  H9    LDAA   CYCLE
00792A D2A3 80 06    A        SUBA   #$06
00793A D2A5 27 5B D302        BEQ    BEGIN
00794                *
00795A D2A7 96 92    A  H3    LDAA   VODAY1+1
00796A D2A9 D6 74    A        LDAB   VOBUF1+1
00797A D2AB 1B                ABA                   UPDATE DAY PTR
00798A D2AC 97 92    A        STAA   VODAY1+1  DAY PTR LSB
00799A D2AE 24 03 D2B3        BCC    H1
00800A D2B0 7C 0091  A        INC    VODAY1    DAY PTR MSB
00801A D2B3 96 91    A  H1    LDAA   VODAY1
00802A D2B5 D6 73    A        LDAB   VOBUF1    LENGTH OF BUFFER
00803A D2B7 1B                ABA
00804A D2B8 97 91    A        STAA   VODAY1
00805A D2BA 96 9E    A        LDAA   PTR+1
00806A D2BC D6 74    A        LDAB   VOBUF1+1
00807A D2BE 1B                ABA                   UPDATE DATA PTR
00808A D2BF 97 9E    A        STAA   PTR+1     DATA PTR LSB
00809A D2C1 24 03 D2C6        BCC    H2
00810A D2C3 7C 009D  A        INC    PTR       POINTER TO DATA IN BUFFER
00811A D2C6 96 9D    A  H2    LDAA   PTR
00812A D2C8 D6 73    A        LDAB   VOBUF1
```



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00813A D2CA 1B                ABA                   UPDATE DATA PTR
00814A D2CB 97 9D    A        STAA   PTR       DATA PTR MSB
00815                *
00816A D2CD 96 A9    A        LDAA   VODAYL+1
00817A D2CF D6 74    A        LDAB   VOBUF1+1
00818A D2D1 1B                ABA
00819A D2D2 97 A9    A        STAA   VODAYL+1
00820A D2D4 24 03 D2D9        BCC    H11
00821A D2D6 7C 00A8  A        INC    VODAYL
00822A D2D9 96 A8    A  H11   LDAA   VODAYL
00823A D2DB D6 73    A        LDAB   VOBUF1
00824A D2DD 1B                ABA
00825A D2DE 97 A8    A        STAA   VODAYL
00826A D2E0 96 97    A        LDAA   PTRL+1
00827A D2E2 D6 74    A        LDAB   VOBUF1+1
00828A D2E4 1B                ABA
00829A D2E5 97 97    A        STAA   PTRL+1
00830A D2E7 24 03 D2EC        BCC    H20
00831A D2E9 7C 0096  A        INC    PTRL
00832A D2EC 96 96    A  H20   LDAA   PTRL
00833A D2EE D6 73    A        LDAB   VOBUF1
00834A D2F0 1B                ABA
00835A D2F1 97 96    A        STAA   PTRL
00836                *
00837A D2F3 96 AB    A        LDAA   VODAYS+1
00838A D2F5 8B 28    A        ADDA   #$28
00839A D2F7 97 AB    A        STAA   VODAYS+1
00840A D2F9 08                INX
00841A D2FA 08                INX
00842A D2FB 08                INX
00843A D2FC 08                INX
00844A D2FD 08                INX
00845A D2FE DF 98    A        STX    PTRS
00846                *
00847A D300 20 3D D33F        BRA    H4
00848A D302 86 01    A  BEGIN LDAA   #$01
00849A D304 97 9F    A        STAA   CYCLE
00850A D306 CE 0400  A        LDX    #START
00851A D309 DF 91    A        STX    VODAY1    INITIALISE DAY PTR
00852A D30B 08                INX
00853A D30C 08                INX
00854A D30D 08                INX
00855A D30E 08                INX
00856A D30F DF 9D    A        STX    PTR       INITIALISE DATA PTR
00857                *
00858A D311 DE A4    A        LDX    LENGTH
00859A D313 DF A8    A        STX    VODAYL
00860A D315 08                INX
00861A D316 08                INX
00862A D317 08                INX
00863A D318 08                INX
00864A D319 DF 96    A        STX    PTRL
00865                *
00866A D31B DE A6    A        LDX    SPEED
00867A D31D DF AA    A        STX    VODAYS
00868A D31F 08                INX
00869A D320 08                INX
00870A D321 08                INX
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PAGE  016  TRY      .SA:1  HEADER

00871A D322 08                 INX
00872A D323 DF 98     A        STX     PTRS
00873                *
00874A D325 20 18 D33F         BRA     H4
00875                *
00876A D327 96 9F     A SMALL  LDAA    CYCLE
00877A D329 4C                 INCA
00878A D32A 97 9F     A        STAA    CYCLE
00879A D32C 96 70     A        LDAA    VOLDAY
00880A D32E 80 02     A        SUBA    #$02
00881A D330 27 04 D336         BEQ     H10
00882A D332 96 9F     A        LDAA    CYCLE
00883A D334 97 70     A        STAA    VOLDAY
00884A D336 96 9F     A H10    LDAA    CYCLE
00885A D338 80 03     A        SUBA    #$03
00886A D33A 27 C6 D302         BEQ     BEGIN
00887A D33C 7E D2A7   A        JMP     H3
00888                *
00889A D33F DE 91     A H4     LDX     VODAY1
00890A D341 96 03     A        LDAA    YEAR
00891A D343 A7 00     A        STAA    0,X
00892A D345 96 04     A        LDAA    MONTH
00893A D347 A7 01     A        STAA    1,X
00894A D349 96 05     A        LDAA    DAOFMO
00895A D34B A7 02     A        STAA    2,X
00896A D34D 96 08     A        LDAA    DAOFWK
00897A D34F A7 03     A        STAA    3,X
00898                *
00899A D351 DE A8     A        LDX     VODAYL
00900A D353 96 03     A        LDAA    YEAR
00901A D355 A7 00     A        STAA    0,X
00902A D357 96 04     A        LDAA    MONTH
00903A D359 A7 01     A        STAA    1,X
00904A D35B 96 05     A        LDAA    DAOFMO
00905A D35D A7 02     A        STAA    2,X
00906A D35F 96 08     A        LDAA    DAOFWK
00907A D361 A7 03     A        STAA    3,X
00908                *
00909A D363 DE AA     A        LDX     VODAYS
00910A D365 96 03     A        LDAA    YEAR
00911A D367 A7 00     A        STAA    0,X
00912A D369 96 04     A        LDAA    MONTH
00913A D36B A7 01     A        STAA    1,X
00914A D36D 96 05     A        LDAA    DAOFMO
00915A D36F A7 02     A        STAA    2,X
00916A D371 96 08     A        LDAA    DAOFWK
00917A D373 A7 03     A        STAA    3,X
00918                *
00919A D375 39                 RTS
00920                *
00921                *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
00922                *
00923                * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
00924                *         COPYRIGHT 1974 BY MOTOROLA INC
00925                *
00926                * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
00927                * CALTRANS TO M.T.C MODIFIED, RELEASE 1.0
00928                *
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PAGE  017  YOUR    .SA:1  HEADER

00929                       * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
00930                       *
00931                       *          1981 08 08
00932                       *
00933                       *     RELEASE LEVEL 6.75
00934                       *
00935                            NAM    PCS1
00936                       * PCS1. AS   REV. 1.00
00937                       * STEVEN SKELTON
00938                       *
00939                       * FOR TYPE 334 CABINET
00940                       *
00941                       * THIS ROUTINE PROVIDES CORRESPONDENCE BETWEEN HARDWARE DETECTOR
00942                       * ASSIGNMENTS (PORT NO. & BIT NO.) AND THE INTERNAL SOFTWARE
00943                       * DETECTOR ASSIGNMENTS
00944                       *
00945A C2A0                      ORG    INPUT
00946                       *
00947A C2A0 86 50     A          LDAA   #$50
00948A C2A2 97 F5     A          STAA   TEMP01   SET UP MSB OF PORT ADDRESSES
00949A C2A4 4F                   CLRA           SET POINTER FOR DETECTOR INPUT PROCESSING AREAS
00950A C2A5 97 EA     A          STAA   INDEX
00951A C2A7 97 EB     A          STAA   INDEX+1
00952                       *
00953                       *        MOTOROLA M6800AM CROSS-ASSEMBLER PAGE 2
00954                       *
00955A C2A9 97 AC     A          STAA   DATA0M   CLEAR DETECTOR INPUT AREA
00956A C2AB 97 BC     A          STAA   DATA0M+$10
00957A C2AD CE C2DF   A          LDX    #DTRTBL  POINTER TO DETECTOR HARDWARE ASSIGNMENT TABLE
00958A C2B0 DF F8     A          STX    TEMP04
00959A C2B2 C6 01     A IPT1     LDAB   #1       SOFTWARE DETECTOR POSITION MASK
00960                       *
00961A C2B4 37           IPT2    PSHB           SAVE SOFTWARE DETECTOR ID
00962A C2B5 A6 00     A          LDAA   0,X      GET LSB OF PORT ADDRESS
00963A C2B7 97 F6     A          STAA   TEMP02   PUT IT NEXT TO MSB
00964A C2B9 A6 01     A          LDAA   1,X      GET THE HARDWARE DETECTOR POSITION MASK
00965A C2BB DE F5     A          LDX    TEMP01   INPUT PORT ADDRESS IN X
00966A C2BD A4 00     A          ANDA   0,X      SEE IF A CHK OVER DETECTOR
00967A C2BF 27 08 C2C9           BEQ    NXTDET   NO --
00968A C2C1 DE EA     A          LDX    INDEX    YES -- GET SOFTWARE DETECTOR PROCESSING INDEX
00969A C2C3 EA AC     A          ORAB   DATA0M,X SET THE INTERNAL DETECTOR BIT
00970A C2C5 E4 C0     A          ANDB   DICTRN,X KEEP ONLY ENABLED DETECTORS
00971A C2C7 E7 AC     A          STAB   DATA0M,X PUT AWAY THE INTERNAL DETECTOR INPUT WORD
00972                       *
00973A C2C9 DE F8     A NXTDET   LDX    TEMP04   HARDWARE DETECTOR TABLE INDEX
00974A C2CB 08                   INX
00975A C2CC 08                   INX            FIX THE INDEX FOR NEXT ENTRY
00976A C2CD DF F8     A          STX    TEMP04   SAVE THE INDEX
00977A C2CF 33                   PULB           GET THE SOFTWARE DETECTOR POSITON BIT
00978                       *
00979A C2D0 58                   ASLB           SHIFT IT LEFT
00980A C2D1 24 E1 C2B4           BCC    IPT2     NOT DONE WITH THIS GROUP YET
00981A C2D3 7D 00EB   A IPT5     TST    INDEX+1  ARE WE ON FIRST GROUP OF DETECTORS?
00982A C2D6 26 06 C2DE           BNE    DONE     NO -- WE'RE DONE
00983A C2D8 86 10     A IPT3     LDAA   #$10     YES -- LETS FIX SOFTWARE DETECTOR AREA INDEX FOR SECOND GROUP
00984A C2DA 97 EB     A          STAA   INDEX+1
00985A C2DC 20 D4 C2B2           BRA    IPT1     GO DO THIS GROUP
00986                       *
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00987A C2DE 39          DONE   RTS              GO PROCESS THE DETECTORS
00988                   *
00989                   *
00990                   *        MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 3
00991                   *
00992A C2DF    01    A DTRTBL FCB    $01       DIRECTION ONE
00993A C2E0    01    A        FCB    TBIT0     LANE ONE
00994A C2E1    01    A        FCB    $01
00995A C2E2    02    A        FCB    TBIT1     LANE TWO
00996A C2E3    01    A        FCB    $01
00997A C2E4    04    A        FCB    TBIT2     LANE THREE
00998A C2E5    01    A        FCB    $01
00999A C2E6    08    A        FCB    TBIT3     LANE FOUR
01000A C2E7    01    A        FCB    $01
01001A C2E8    10    A        FCB    TBIT4     LANE FIVE
01002A C2E9    01    A        FCB    $01
01003A C2EA    20    A        FCB    TBIT5     LANE SIX
01004A C2EB    01    A        FCB    $01
01005A C2EC    40    A        FCB    TBIT6     LANE SEVEN
01006A C2ED    01    A        FCB    $01
01007A C2EE    80    A        FCB    TBIT7     LANE EIGHT
01008                   *
01009A C2EF    03    A        FCB    $03       DIRECTION TWO
01010A C2F0    01    A        FCB    TBIT0     LALE ONE
01011A C2F1    03    A        FCB    $03
01012A C2F2    02    A        FCB    TBIT1     LANE TWO
01013A C2F3    03    A        FCB    $03
01014A C2F4    04    A        FCB    TBIT2     LANE THREE
01015A C2F5    03    A        FCB    $03
01016A C2F6    08    A        FCB    TBIT3     LANE FOUR
01017A C2F7    03    A        FCB    $03
01018A C2F8    10    A        FCB    TBIT4     LANE FIVE
01019A C2F9    03    A        FCB    $03
01020A C2FA    20    A        FCB    TBIT5     LANE SIX
01021A C2FB    03    A        FCB    $03
01022A C2FC    40    A        FCB    TBIT6     LANE SEVEN
01023A C2FD    03    A        FCB    $03
01024A C2FE    80    A        FCB    TBIT7     LANE EIGHT
01025                   *
01026A C2FF    FFFF  A        FDB    $0FFFF
01027A C301    FFFF  A        FDB    $0FFFF
01028A C303    FF    A        FCB    $0FF
01029                   *
01030                   *        MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
01031                   *
01032                   * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
01033                   *        COPYRIGHT 1974 BY MOTOROLA INC
01034                   *
01035                   * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
01036                   * CALTRANS TO M.T.C. MODIFIED, RELEASE 1.0
01037                   *
01038                   * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
01039                   *
01040                   *          1981 08 20
01041                   *
01042                   *      RELEASE LEVEL 6.75
01043                   *
01044                        NAM    PCS4
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01045                   *
01046                   * PCS4.AS   REV. 1.00
01047                   * STEVEN SKELTON
01048                   *
01049                   *  LANE DATA HANDLER ROUTINE
01050                   *
01051                   * THIS ROUTINE USES THE SIX SECOND VOLUME AND OCCUPANCY
01052                   * COUNTS TO CALCULATE THE 1 MINUTE RUNNING TOTAL
01053                   * VOLUME AND OCCUPANCY FOR EACH LANE.
01054                   *
01055                   * THE ROUTINE PROVIDES A PSUEDO RUNNING TOTAL BY
01056                   * A.  ONE MINUTE RUNNING TOTAL
01057                   *       1.  PROPORTION CURRENT ONE-MINUTE RUNNING TOTAL TO
01058                   *           9/10THS OF ITSELF.
01059                   *       2.  ADD LATEST 6 SECOND COUNT TO FORM NEW ONE-MINUTE RUNNING TOTAL
01060                   *
01061A C400                     ORG    PCS4
01062                   *
01063A C400 BD C060  A          JSR    SETUP     SETUP INDEX REGISTER AT HIGHEST LANE
01064A C403 DF F8    A          STX    TEMP04    SET UP ADDITIONAL INDEX LOCATION
01065A C405 96 F4    A          LDAA   KAY1      CLEAR LANE VARIABLES?
01066A C407 27 10 C419          BEQ    PROP1     NO -- ON WITH PROGRAM
01067                   *
01068A C409 C6 0B    A D1       LDAB   #11       VARIABLES TO CLEAR PER LANE
01069A C40B 6F 00    A D2       CLR    OSIX1,X
01070A C40D 08                  INX
01071A C40E 5A                  DECB              ALL VARIABLES CLEARED?
01072A C40F 26 FA C40B          BNE    D2        IF NOT, GET ANOTHER
01073A C411 BD C030  A          JSR    NEXTLN    POINT TO NEXT LANE'S VARIABLES
01074A C414 24 F3 C409          BCC    D1        CLEAR THEM IF CARRY CLEAR
01075                   *
01076A C416 BD C060  A          JSR    SETUP     SET MAIN LANE DATA INDEXES
01077                   *
01078A C419 96 F3    A PROP1    LDAA   PCW1      1 MIN. ART PROPORTION CONTROL
01079A C41B C6 02    A          LDAB   #OCMN1M   SET TO GET 1 MIN OCCUPANCY
01080A C41D BD 53 C472          BSR    PRO16     PROPORTION IT
01081A C41F 96 F3    A          LDAA   PCW1
01082A C421 C6 04    A          LDAB   #VMN1     SET TO GET 1 MIN VOLUME
01083A C423 BD 3F C464          BSR    PRO8      PROPORTION IT
01084                   *
01085                   *
01086                   *        MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 3
01087                   *
01088A C425 BD C030  A          JSR    NEXTLN    LAST LANE DONE?
01089A C428 24 EF C419          BCC    PROP1     NO -- DO NEXT ONE
01090                   *
01091A C42A BD C060  A ADTBL    JSR    SETUP     POINT INDEX REGISTER TO HIGHEST LANE
01092A C42D A6 00    A D50      LDAA   OSIX1,X   SIX SECOND OCCUPANCY
01093A C42F 16                  TAB              COPY OCCUPANCY INTO B
01094A C430 EB 06    A          ADDB   OCC1L,X   ADD TO 30 SECOND OCCUPANCY - LSB
01095A C432 E7 06    A          STAB   OCC1L,X   & SAVE IT
01096A C434 24 02 C438          BCC    D3        OVERFLOW?
01097A C436 6C 05    A          INC    OCC1M,X   YES, INCREMENT MSB
01098A C438 16               D3 TAB              COPY OCCUPANCY INTO B, AGAIN
01099A C439 AB 03    A          ADDA   OCMN1L,X  ADD TO 1 MINUTE OCCUPANCY - LSB
01100A C43B A7 03    A          STAA   OCMN1L,X  & SAVE IT
01101A C43D 24 02 C441          BCC    D5        OVERFLOW?
01102A C43F 6C 02    A          INC    OCMN1M,X  YES, INCREMENT MSB
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PAGE  020  YOUR    .SA:1  PCS4

01103A C441 6F 00     A D5      CLR     OSIX1,X  CLEAR 6 SEC OCCUPANCY
01104A C443 A6 01     A         LDAA    VSIX1,X  SIX SECOND VOLUME
01105A C445 16                  TAB              COPY VOLUME INTO B
01106A C446 EB 07     A         ADDB    VOL1,X   ADD TO 30 SECOND VOLUME
01107A C448 E7 07     A         STAB    VOL1,X   & SAVE IT
01108A C44A 16                  TAB              COPY VOLUME INTO B, AGAIN
01109A C44B EB 09     A         ADDB    VD1L,X   ADD 6 SEC.  VOL TO 1-MP VOL
01110A C44D E7 09     A         STAB    VD1L,X   & SAVE IT
01111A C44F 24 02 C453          BCC     D56      OVERFLOW?
01112A C451 6C 08     A         INC     VD1M,X   YES, INCREMENT MSB
01113A C453 48          D56     ASLA             DOUBLE THE VOLUMES
01114A C454 16                  TAB              COPY VOLUME INTO B, AGAIN
01115A C455 AB 04     A         ADDA    VMN1,X   ADD TO 1 MINUTE VOLUME
01116A C457 A7 04     A         STAA    VMN1,X   & SAVE IT
01117A C459 6F 01     A         CLR     VSIX1,X  CLEAR 6 SEC VOLUME
01118A C45B BD C030   A         JSR     NEXTLN   GET NEXT LANE'S ADDRESS
01119                   *
01120                   *       MOTOROLA M68SAM CROSS-ASSMBLER PAGE 4
01121                   *
01122A C45E 24 CD C42D          BCC     D50      GET ANOTHER LANE OR
01123A C460 7F 00F4   A         CLR     KAY1     RESET THE LANE DATA TABLE FLAG
01124A C463 39                  RTS              RETURN TO CALLER
01125                   *
01126A C464 DB EB     A PRO8    ADDB    INDEX+1  COMPUTE ADDRESS OF DATA
01127A C466 D7 F9     A         STAB    TEMP05   STORE IT
01128A C468 DE F8     A         LDX     TEMP04   SET X REG
01129A C46A BD C080   A         JSR     PRPRT8   DO THE PROPORTIONING
01130A C46D DE F8     A         LDX     TEMP04   RESET Y REG
01131A C46F E7 00     A         STAB    0,X      PUT AWAY NEW DATA
01132A C471 39                  RTS
01133                   *
01134A C472 DB EB     A PRO16   ADDB    INDEX+1
01135A C474 D7 F9     A         STAB    TEMP05
01136A C476 DE F8     A         LDX     TEMP04
01137A C478 BD C080   A         JSR     PRPRT    DO A 2-BYTE PROPORTION
01138A C47B DE F8     A         LDX     TEMP04
01139A C47D E7 01     A         STAB    1,X      SALT AWAY LSB
01140A C47F A7 00     A         STAA    0,X      SAVE MSB
01141A C481 39                  RTS
01142A C482   FFFF    A         FDB     $0FFFF
01143                   *
01144                   *           MOTOROLA M68SAM CROSS-ASSMBLER PAGE 1
01145                   *
01146                   * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
01147                   *         COPYRIGHT 1974 BY MOTOROLA INC
01148                   *
01149                   * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
01150                   * CALTRANS TO M.T.C. MODIFIED, RELEASE 1.0
01151                   *
01152                   * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
01153                   *
01154                   *           1981 08 20
01155                   *
01156                   *       RELEASE LEVEL 6.75
01157                   *
01158                           NAM     PCS4A
01159                   *
01160                   * PCS4A.AS   REV. 1.00
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PAGE  021  YOUR    .SA:1  PCS4A

01161                   * STEVEN SKELTON
01162                   *
01163                   *  LANE DATA HANDLER ROUTINE
01164                   *
01165                   * THIS ROUTINE USES THE SIX SECOND VOLUME AND OCCUPANCY
01166                   * COUNTS TO CALCULATE THE 1 MINUTE RUNNING TOTAL
01167                   * VOLUME AND OCCUPANCY FOR EACH LANE.
01168                   *
01169                   * THE ROUTINE PROVIDES A PSUEDO RUNNING TOTAL BY
01170                   * A.  ONE MINUTE RUNNING TOTAL
01171                   *       1.  PROPORTION CURRENT ONE-MINUTE RUNNING TOTAL TO
01172                   *           9/10THS OF ITSELF.
01173                   *       2.  ADD LATEST 6 SECOND COUNT TO FORM NEW ONE-MINUTE RUNNING TOTAL
01174                   *
01175A C840                     ORG     PCS4A
01176                   *
01177A C840 BD C060   A         JSR     SETUP    SETUP INDEX REGISTER AT HIGHEST LANE
01178A C843 DF F8     A         STX     TEMP04   SET UP ADDITIONAL INDEX LOCATION
01179A C845 96 A2     A         LDAA    KAY2     CLEAR LANE VARIABLES?
01180A C847 27 10 C859          BEQ     POP1     NO -- ON WITH PROGRAM
01181                   *
01182A C849 C6 0B     A DA1     LDAB    #11      VARIABLES TO CLEAR PER LANE
01183A C84B 6F 80     A DA2     CLR     OSIX1+$80,X
01184A C84D 08                  INX
01185A C84E 5A                  DECB             ALL VARIABLES CLEARED?
01186A C84F 26 FA C84B          BNE     DA2      IF NOT, GET ANOTHER
01187A C851 BD C030   A         JSR     NEXTLN   POINT TO NEXT LANE'S VARIABLES
01188A C854 24 F3 C849          BCC     DA1      CLEAR THEM IF CARRY CLEAR
01189                   *
01190A C856 BD C060   A         JSR     SETUP    SET MAIN LANE DATA INDEXES
01191                   *
01192A C859 96 F3     A POP1    LDAA    PCW1     1 MIN. ANT PROPORTION CONTROL
01193A C85B C6 82     A         LDAB    #OCMN1M+$80 SET TO GET 1 MIN OCCUPANCY
01194A C85D BD C472   A         JSR     PRO16    PROPORTION IT
01195A C860 96 F3     A         LDAA    PCW1
01196A C862 C6 84     A         LDAB    #VMN1+$80 SET TO GET 1 MIN VOLUME
01197A C864 BD C464   A         JSR     PRO8     PROPORTION IT
01198                   *
01199                   *
01200                   *       MOTOROLA M68SAM CROSS-ASSMBLER PAGE 3
01201                   *
01202A C867 BD C030   A         JSR     NEXTLN   LAST LANE DONE?
01203A C86A 24 ED C859          BCC     POP1     NO -- DO NEXT ONE
01204                   *
01205A C86C BD C060   A         JSR     SETUP    POINT INDEX REGISTER TO HIGHEST LANE
01206A C86F A6 80     A DA50    LDAA    OSIX1+$80,X SIX SECOND OCCUPANCY
01207A C871 16                  TAB              COPY OCCUPANCY INTO B
01208A C872 EB 86     A         ADDB    OCC1L+$80,X ADD TO 30 SECOND OCCUPANCY - LSB
01209A C874 E7 86     A         STAB    OCC1L+$80,X & SAVE IT
01210A C876 24 02 C87A          BCC     DA3      OVERFLOW?
01211A C878 6C 85     A         INC     OCC1M+$80,X YES, INCREMENT MSB
01212A C87A 16          DA3     TAB              COPY OCCUPANCY INTO B, AGAIN
01213A C87B AB 83     A         ADDA    OCMN1L+$80,X ADD TO 1 MINUTE OCCUPANCY - LSB
01214A C87D A7 83     A         STAA    OCMN1L+$80,X & SAVE IT
01215A C87F 24 02 C883          BCC     DA5      OVERFLOW?
01216A C881 6C 82     A         INC     OCMN1M+$80,X YES, INCREMENT MSB
01217A C883 6F 80     A DA5     CLR     OSIX1+$80,X CLEAR 6 SEC OCCUPANCY
01218A C885 A6 81     A         LDAA    VSIX1+$80,X SIX SECOND VOLUME
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01219A C807 16              TAB             COPY VOLUME INTO B
01220A C808 EB 87    A      ADDB    VOL1+$80,X ADD IN 30 SECOND VOLUME
01221A C80A E7 87    A      STAB    VOL1+$80,X & SAVE IT
01222A C80C 16              TAB             COPY VOLUME INTO B, AGAIN
01223A C80D EB 89    A      ADDB    VD1L+$80,X ADD 6 SEC.  VOL TO 1-MN VOL
01224A C80F E7 89    A      STAB    VD1L+$80,X & SAVE IT
01225A C811 24 02 C815      BCC     DA56    OVERFLOW?
01226A C813 6C 88    A      INC     VD1M+$80,X YES, INCREMENT MSB
01227A C815 48          DA56 ASLA            DOUBLE THE VOLUMES
01228A C816 16              TAB             COPY VOLUME INTO B, AGAIN
01229A C817 AB 84    A      ADDA    VMN1+$80,X ADD TO 1 MINUTE VOLUME
01230A C819 A7 84    A      STAA    VMN1+$80,X & SAVE IT
01231A C81B 6F 81    A      CLR     VSIX1+$80,X CLEAR 6 SEC VOLUME
01232A C81D BD C030  A      JSR     NEXTLN  GET NEXT LANE'S ADDRESS
01233                  *
01234                  *       MOTOROLA M68SAM CROSS-ASSMBLER PAGE 4
01235                  *
01236A C820 24 CD C86F      BCC     DA50    GET ANOTHER LANE OR
01237A C822 7F 00A2  A      CLR     KAY2    RESET THE LANE DATA TABLE FLAG
01238A C825 39              RTS             RETURN TO CALLER
01239                  *
01240A C826    FFFF  A      FDB     $0FFFF
01241                  *
01242                  *       MOTOROLA M68SAM CROSS-ASSMBLER PAGE 1
01243                  *
01244                  * M68SAM IS THE PROPERTY OF MOTROLA SPD, INC.
01245                  *       COPYRIGHT 1974 BY MOTOROLA INC
01246                  *
01247                  * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
01248                  * CALTRANS TO M.T.C. MODIFIED, RELEASE 1.0
01249                  *
01250                  * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
01251                  *
01252                  *           1981 OR 20
01253                  *
01254                  *     RELEASE LEVEL 6.75
01255                  *
01256                       NAM     PCS5
01257                  *
01258                  * PCS5.AS  REV 1.00
01259                  * STEVEN SKELTON
01260                  *
01261                  * THIS ROUTINE SUMS THE RUNNING TOTALS FOR UP TO EIGHT VALID LANES
01262                  * AND DIVIDES BY THE NUMBER OF VALID LANES, PROVIDING
01263                  * AN AVERAGE RUNNING TOTAL.
01264                  *
01265                  *
01266                  * FOUR SEPARATE AVERAGE RUNNING TOTALS (ART) ARE
01267                  * MAINTAINED. ONE FOR VOLUME AND ONE FOR OCCUPANCY
01268                  * FOR  1 MINUTE DATA.
01269                  *
01270A C4A0                 ORG     PCS5
01271                  *
01272                  *          MOTOROLA M68SAM CROSS-ASSMBLER PAGE 2
01273                  *
01274A C4A0 C6 04    A      LDAB    #04     4 VARIABLES TO CLEAR
01275A C4A2 CE 00EC  A      LDX     #ARIMON
01276A C4A5 6F 00    A LOOP1 CLR     0,X     CLEAR ART
```

```
01277A C4A7 08                    INX             NEXT ART
01278A C4A8 5A                    DECB            LAST ONE CLEARED?
01279A C4A9 26 FA C4A5            BNE   LOOP1     IF NOT, CLEAR ANOTHER.
01280                       *
01281A C4AB C6 08     A           LDAB  #8        COUNTER FOR VALID LANES
01282A C4AD BD C040   A           JSR   SETUP     POINT TO LANE 5 AREA
01283A C4B0 A6 0A     A LOOP2     LDAA  DET1,X    DETECTOR ERROR WORD
01284A C4B2 48                    ASLA            DETECTOR ERROR BIT TO CARRY
01285A C4B3 24 06 C4BB            BCC   E5        IF DATA O.K. - GO ON
01286A C4B5 5A           E3       DECB            DECREMENT VALID LANE COUNT
01287A C4B6 44                    LSRA            CLEAR DETECTOR ERROR BIT
01288A C4B7 A7 0A     A           STAA  DET1,X    RESTORE ERROR WORD
01289A C4B9 20 21 C4DC            BRA   NLOOP2    SEE IF ALL LANES COUNTED
01290                       *
01291A C4BB 6D 0C     A E5        TST   LNDIS1,X  DISABLE THIS LANE'S DATA?
01292A C4BD 26 F6 C4B5            BNE   E3        YES -- DECREMENT VALID LANE COUNT & SET FOR NEXT LANE
01293A C4BF A6 04     A           LDAA  VMN1,X    1 MINUTE VOLUME
01294A C4C1 36                    PSHA
01295A C4C2 A6 02     A           LDAA  OCMN1M,X  1 MINUTE OCCUPANCY - MSB
01296A C4C4 36                    PSHA
01297A C4C5 A6 03     A           LDAA  OCMN1L,X  1 MINUTE OCCUPANCY - LSB
01298A C4C7 CE 00EC   A           LDX   #AR1MOM   POINT TO ART TABLE
01299A C4CA AB 01     A LOOP3     ADDA  1,X       ADD TO OCCUPANCY ART - LSB
01300A C4CC A7 01     A           STAA  1,X       STORE
01301A C4CE 32                    PULA            OCCUPANCY - MSB
01302A C4CF A9 00     A           ADCA  0,X       ADD TO OCCUPANCY ART - MSB
01303A C4D1 A7 00     A           STAA  0,X       STORE
01304A C4D3 32                    PULA            VOLUME
01305                       *
01306                       *        MOTOROLA M68SAM CROSS-ASSMBLER PAGE 3
01307                       *
01308A C4D4 AB 03     A           ADDA  3,X       ADD TO VOLUME ART - LSB
01309A C4D6 A7 03     A           STAA  3,X       STORE
01310A C4D8 24 02 C4DC            BCC   NLOOP2    IF NO CARRY, LEAVE MSB ALONE
01311A C4DA 6C 02     A           INC   2,X       ADD CARRY TO MSB
01312                       *
01313                       *
01314A C4DC BD C030   A NLOOP2 JSR   NEXTLN    GET NEXT LANE'S AREA
01315A C4DF 24 CF C4B0            BCC   LOOP2     IF ALL LANES NOT ADDED, GO GET ANOTHER
01316                       *
01317A C4E1 CE C508   A AVG       LDX   #PCWTAB   SET INDEX REGISTER
01318A C4E4 5C                    INCB
01319A C4E5 5A           LOOP4    DECB            DECREMENT LANE COUNT
01320A C4E6 27 03 C4EB            BEQ   PIKUP     STOP LOOP WHEN POINTER CORRECTLY POSITIONED
01321A C4E8 08                    INX             MOVE POINTER TO NEXT PCW
01322A C4E9 20 FA C4E5            BRA   LOOP4     CHECK ON POINTER POSITION AGAIN
01323                       *
01324A C4EB A6 00     A PIKUP     LDAA  0,X       PROPER PROPORTION CONTROL WORD(PCW)
01325A C4ED CE 00EC   A           LDX   #AR1MOM   POINTER TO SUMMED RUNNING TOTALS
01326A C4F0 36           LOOP5    PSHA            SAVE PCW ON STACK
01327A C4F1 DF EA     A           STX   INDEX     SAVE INDEX REGISTER
01328A C4F3 BD C0B0   A           JSR   PRPRT     PROPORTION THE LANE'S SUM
01329A C4F6 DE EA     A           LDX   INDEX     POINT TO ART TABLE
01330A C4F8 A7 00     A           STAA  0,X       STORE MSB
01331A C4FA E7 01     A           STAB  1,X       STORE LSB
01332A C4FC 8C 00EE   A           CPX   #AR1MVL-1 FINISHED ALL PROPORTIONING?
01333A C4FF 27 05 C506            BEQ   OUT       IF SO, CLEAN UP STACK AND BACK TO CALLER
01334A C501 08                    INX             POINT TO NEXT
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01335A C502 08                  INX             LANE SUM
01336A C503 32                  PULA            PCW FROM STACK
01337                       *
01338                       *           MOTOROLA M68SAM CROSS-ASSMBLER PAGE 4
01339                       *
01340A C504 20 EA C4F0          BRA     LOOP5   BACK FOR NEXT ART
01341                       *
01342A C506 31              OUT     INS             DELETE PCW FROM STACK
01343A C507 39              OUT1    RTS             BACK TO CALLER
01344A C508     FF      A PCWTAB FCB    $0FF        PCW FOR 0 LANES
01345A C509     00      A       FCB     PCLN1       STORE PROPORTION CONTROL WORDS
01346A C50A     80      A       FCB     PCLN2       IN PROM FOR AVERAGING THE OCCUPANCIES
01347A C50B     AB      A       FCB     PCLN3       AND VOLUMES FOR THE NUMBER OF VALID LANES
01348A C50C     C0      A       FCB     PCLN4       AT THIS SITE.
01349A C50D     CD      A       FCB     PCLN5
01350A C50E     D5      A       FCB     PCLN6
01351A C50F     DB      A       FCB     PCLN7
01352A C510     E0      A       FCB     PCLN8
01353                       *
01354                       *       MOTOROLA M68SAM CROSS-ASSMBLER PAGE 1
01355                       *
01356                       * M68SAM IS THE PROPERTY OF MOTROLA SPD, INC.
01357                       *       COPYRIGHT 1974 BY MOTOROLA INC
01358                       *
01359                       * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
01360                       * CALTRANS TO M.T.C. MODIFIED, RELEASE 1.0
01361                       *
01362                       * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
01363                       *
01364                       *           1981 08 20
01365                       *
01366                       *     RELEASE LEVEL 6.75
01367                       *
01368                           NAM     PCS5A
01369                       *
01370                       * PCS5A.AS  REV 1.00
01371                       * STEVEN SKELTON
01372                       *
01373                       * THIS ROUTINE SUMS THE RUNNING TOTALS FOR UP TO EIGHT VALID LANES
01374                       * AND DIVIDES BY THE NUMBER OF VALID LANES, PROVIDING
01375                       * AN AVERAGE RUNNING TOTAL.
01376                       *
01377                       *
01378                       * TWO SEPARATE AVERAGE RUNNING TOTALS (ART) ARE
01379                       * MAINTAINED. ONE FOR VOLUME AND ONE FOR OCCUPANCY
01380                       * FOR  1 MINUTE DATA.
01381                       *
01382A C8D0                     ORG     PCS5A
01383                       *
01384                       *           MOTOROLA M68SAM CROSS-ASSMBLER PAGE 2
01385                       *
01386A C8D0 C6 04       A       LDAB    #04         4 VARIABLES TO CLEAR
01387A C8D2 CE 00FC     A       LDX     #AR1MOM+$10
01388A C8D5 6F 00       A LOOPA1 CLR    0,X         CLEAR ART
01389A C8D7 08                  INX             NEXT ART
01390A C8D8 5A                  DECB            LAST ONE CLEARED?
01391A C8D9 26 FA C8D5          BNE     LOOPA1  IF NOT, CLEAR ANOTHER.
01392                       *
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01393A C8DB C6 08     A        LDAB  #8       COUNTER FOR VALID LANES
01394A C8DD BD C040   A        JSR   SETUP    POINT TO LANE 5 AREA
01395A C8E0 A6 8A     A LOOPA2 LDAA  DET1+$80,X DETECTOR ERROR WORD
01396A C8E2 48                 ASLA           DETECTOR ERROR BIT TO CARRY
01397A C8E3 24 06 C8EB         BCC   EA5      IF DATA O.K. - GO ON
01398A C8E5 5A           EA3   DECB           DECREMENT VALID LANE COUNT
01399A C8E6 44                 LSRA           CLEAR DETECTOR ERROR BIT
01400A C8E7 A7 8A     A        STAA  DET1+$80,X RESTORE ERROR WORD
01401A C8E9 20 21 C90C         BRA   NOOP2    SEE IF ALL LANES COUNTED
01402                  *
01403A C8EB 6D 8C     A EA5    TST   LNDIS1+$80,X DISABLE THIS LANE'S DATA?
01404A C8ED 26 F6 C8E5         BNE   EA3      YES -- DECREMENT VALID LANE COUNT & SET FOR NEXT LANE
01405A C8EF A6 84     A        LDAA  VMN1+$80,X 1 MINUTE VOLUME
01406A C8F1 36                 PSHA
01407A C8F2 A6 82     A        LDAA  OCMN1M+$80,X 1 MINUTE OCCUPANCY - MSB
01408A C8F4 36                 PSHA
01409A C8F5 A6 83     A        LDAA  OCMN1L+$80,X 1 MINUTE OCCUPANCY - LSB
01410A C8F7 CE 00FC   A        LDX   #AR1MOM+$10 POINT TO ART TABLE
01411A C8FA AB 01     A LOOPA3 ADDA  1,X      ADD TO OCCUPANCY ART - LSB
01412A C8FC A7 01     A        STAA  1,X      STORE
01413A C8FE 32                 PULA           OCCUPANCY - MSB
01414A C8FF A9 00     A        ADCA  0,X      ADD TO OCCUPANCY ART - MSB
01415A C901 A7 00     A        STAA  0,X      STORE
01416A C903 32                 PULA           VOLUME
01417                  *
01418                  *
01419                  *
01420A C904 AB 03     A        ADDA  3,X      ADD TO VOLUME ART - LSB
01421A C906 A7 03     A        STAA  3,X      STORE
01422A C908 24 02 C90C         BCC   NOOP2    IF NO CARRY, LEAVE MSB ALONE
01423A C90A 6C 02     A        INC   2,X      ADD CARRY TO MSB
01424                  *
01425                  *
01426A C90C BD C030   A NOOP2  JSR   NEXTLN   GET NEXT LANE'S AREA
01427A C90F 24 CF C8E0         BCC   LOOPA2   IF ALL LANES NOT ADDED, GO GET ANOTHER
01428                  *
01429A C911 CE C508   A        LDX   #PCWTAB  SET INDEX REGISTER
01430A C914 5C                 INCB
01431A C915 5A           LOOPA4 DECB           DECREMENT LANE COUNT
01432A C916 27 03 C91B         BEQ   PICKUP   STOP LOOP WHEN POINTER CORRECTLY POSITIONED
01433A C918 08                 INX            MOVE POINTER TO NEXT PCW
01434A C919 20 FA C915         BRA   LOOPA4   CHECK ON POINTER POSITION AGAIN
01435                  *
01436A C91B A6 00     A PICKUP LDAA  0,X      PROPER PROPORTION CONTROL WORD(PCW)
01437A C91D CE 00FC   A        LDX   #AR1MOM+$10 POINTER TO SUMMED RUNNING TOTALS
01438A C920 36           LOOPA5 PSHA           SAVE PCW ON STACK
01439A C921 DF EA     A        STX   INDEX    SAVE INDEX REGISTER
01440A C923 BD C0B0   A        JSR   PRPRT    PROPORTION THE LANE'S SUM
01441A C926 DE EA     A        LDX   INDEX    POINT TO ART TABLE
01442A C928 A7 00     A        STAA  0,X      STORE MSB
01443A C92A E7 01     A        STAB  1,X      STORE LSB
01444A C92C 8C 00FE   A        CPX   #AR1MVL-1+$10 FINISHED ALL PROPORTIONING?
01445A C92F 27 05 C936         BEQ   OUTT     IF SO, CLEAN UP STACK AND BACK TO CALLER
01446A C931 08                 INX            POINT TO NEXT
01447A C932 08                 INX            LANE SUM
01448A C933 32                 PULA           PCW FROM STACK
01449
01450                  *
                       *
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MOTOROLA M68SAM CROSS-ASSMBLER PAGE 3

MOTOROLA M68SAM CROSS-ASSMBLER PAGE 4

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01451                          *
01452A C934 20 EA C920         *       BRA     LOOPA5   BACK FOR NEXT ART
01453                          *
01454A C936 31                 OUTT    INS              DELETE PCW FROM STACK
01455A C937 39                 OUTT1   RTS              BACK TO CALLER
01456                          *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
01457                          *
01458                          * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
01459                          *         COPYRIGHT 1974 BY MOTOROLA INC
01460                          *
01461                          * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
01462                          * CALTRANS TO M.T.C. MODIFIED, RELEASE 1.0
01463                          *
01464                          * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
01465                          *
01466                          *             1981 08 24
01467                          *
01468                          *       RELEASE LEVEL 6.75
01469                          *
01470                                  NAM     PCS6
01471                          * PCS6.AS REV. 1.00
01472                          * STEVEN SKELTON
01473                          *
01474                          * THIS ROUTINE MONITORS MAIN LANE DETECTORS
01475                          *  FOR FAILURE EVERY 6 SEC.
01476                          *
01477                          *  1.  OCCUPANCY TEST #1 (OCTST1)
01478                          *      PERFORMED - ALWAYS
01479                          *      FAILURE - IF 1 MIN OCCUPANCY OF LANE > 'OC10CM+L'
01480                          *              - SETS BIT 2 IN DETECTOR STATUS TABLE
01481                          *
01482                          * ANY FAILURE SETS MS BIT OF THAT LANE'S DETECTOR ERROR WORD. (DETX)
01483                          *
01484A C550                            ORG     PCS6
01485                          *
01486           0082  A 01BIT  EQU     $82
01487           0080  A ERRBIT EQU     $80
01488                          *
01489A C550 CE 0201  A                 LDX     #OCMN1M#256+1 PTR FOR 1 MIN OCCUPANCY
01490A C553 DF F8    A                 STX     TEMP04
01491A C555 01                         NOP
01492A C556 01                         NOP
01493                          *
01494A C557 DE 9B    A OCTST1  LDX     OC10CM   GET OCCUPANCY LIMIT
01495A C559 DF F6    A         STX     TEMP02   STORE FOR OCTEST
01496A C55B BD C060  A         JSR     SETUP    SET DATA INDEXES FOR M.L. DATA
01497A C55E BD 42 C5A2 LO1     BSR     OCTEST   IS LANE OCC > LIMIT?
01498A C560 24 04 C566         BCC     LO7      NO --
01499A C562 86 82    A         LDAA    #01BIT   YES -- ERROR BIT
01500A C564 BD 33 C599         BSR     ERSET    PROCESS ERROR FLAGS
01501A C566 E6 0A    A LO7     LDAB    DET1,X   GET CURRENT DETECTOR ERROR WORD
01502A C568 58                 ASLB
01503                          *
01504                          *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 3
01505                          *
01506A C569 58                 ASLB            ACTIVE STATE CHANGE ERROR?
01507A C56A 24 04 C570         BCC     LO9     NO -- GO ON
01508A C56C 86 80    A         LDAA    #ERRBIT YES -- FLAG THIS DETECTOR
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01509A C56E BD 29 C599         BSR     ERSET   YES -- FLAG THIS DETECTOR
01510A C570 BD C030  A LO9     JSR     NEXTLN  LAST LANE?
01511A C573 24 E9 C55E         BCC     LO1     NO -- LOOP BACK
01512                          *
01513A C575 C6 01    A         LDAB    #$01    SET O/P LANE PTR
01514A C577 CE 0100  A         LDX     #$100   SET DETECTOR PTR
01515A C57A D7 F7    A         STAB    TEMP03  STORE O/P LANE POINTER
01516A C57C A6 0A    A LO12    LDAA    DET1,X  GET ERROR BYTE
01517A C57E 48                 ASLA            ERROR BIT SET?
01518A C57F 24 04 C585         BCC     LO11    NO
01519A C581 DA BC    A         ORAB    DETER1  SET ALARM
01520A C583 D7 BC    A         STAB    DETER1  STORE ALARM
01521A C585 D6 F7    A LO11    LDAB    TEMP03
01522A C587 58                 ASLB            INCREMENT O/P LANE PTR
01523A C588 D7 F7    A         STAB    TEMP03  STORE PTR
01524A C58A 25 0C C598         BCS     LO13    ALL DONE?
01525A C58C DF F5    A         STX     TEMP01  STORE DETECTOR PTR
01526A C58E 96 F6    A         LDAA    TEMP02
01527A C590 8B 10    A         ADDA    #$10    UPDATE DETECTOR PTR
01528A C592 97 F6    A         STAA    TEMP02  STORE IT!
01529A C594 DE F5    A         LDX     TEMP01  LOAD DETECTOR PTR
01530A C596 20 E4 C57C         BRA     LO12
01531A C598 39           LO13  RTS
01532                          *
01533                          *
01534A C599 E6 0C    A ERSET   LDAB    LNDIS1,X LANE DISABLED?
01535A C59B 26 04 C5A1         BNE     ER9      YES -- GO BACK
01536A C59D AA 0A    A         ORAA    DET1,X   SET BIT
01537A C59F A7 0A    A         STAA    DET1,X   STORE IT
01538A C5A1 39           ER9   RTS              BACK TO CALLER
01539                          *
01540A C5A2 96 EB    A OCTEST  LDAA    INDEX+1
01541A C5A4 9B F8    A         ADDA    TEMP04
01542A C5A6 97 FA    A         STAA    TEMP06
01543A C5A8 DE F9    A         LDX     TEMP05
01544A C5AA BD C000  A         JSR     CMP16    MAKE OCCUPANCY COMPARISON
01545A C5AD DE EA    A         LDX     INDEX    RESTORE X
01546A C5AF 39                 RTS
01547                          *
01548                          *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
01549                          *
01550                          * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
01551                          *         COPYRIGHT 1974 BY MOTOROLA INC
01552                          *
01553                          * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
01554                          * CALTRANS TO M.T.C. MODIFIED, RELEASE 1.0
01555                          *
01556                          * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
01557                          *
01558                          *             1981 08 24
01559                          *
01560                          *       RELEASE LEVEL 6.75
01561                          *
01562                                  NAM     PCS6A
01563                          * PCS6A.AS REV. 1.00
01564                          * STEVEN SKELTON
01565                          *
01566                          * THIS ROUTINE MONITORS MAIN LANE DETECTORS
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01567                          *  FOR FAILURE EVERY 6 SEC.
01568                          *
01569                          *  1.  OCCUPANCY TEST #1 (OCTST1)
01570                          *      PERFORMED - ALWAYS
01571                          *      FAILURE - IF 1 MIN OCCUPANCY OF LANE > *OC1OCM,L*
01572                          *              - SETS BIT 2 IN DETECTOR STATUS TABLE
01573                          *
01574                          *
01575                          *  ANY FAILURE SETS MS BIT OF THAT LANE'S DETECTOR ERROR WORD. (DETX)
01576A C950                    *
01577                          *       ORG    PCS6A
01578                          *
01579A C950 CE 8201   A        *       LDX    #OCMN1M#256+#80#256+1 PTR FOR 1 MIN OCCUPANCY
01580A C953 DF F8     A        *       STX    TEMP04
01581A C955 01                 *       NOP
01582A C956 01                 *       NOP
01583                          *
01584A C957 DE 9B     A        *       LDX    OC1OCM   GET OCCUPANCY LIMIT
01585A C959 DF F6     A        *       STX    TEMP02   STORE FOR OCTEST
01586A C95B BD C060   A        *       JSR    SETUP    SET DATA INDEXES FOR M.L. DATA
01587A C95E BD C5A2   A LOA1   *       JSR    OC1EST   IS LANE OCC > LIMIT?
01588A C961 24 05 C968         *       BCC    LOA7     NO --
01589A C963 86 82     A        *       LDAA   #01BIT   YES -- ERROR BIT
01590A C965 BD C99C   A        *       JSR    ERSETT   PROCESS ERROR FLAGS
01591A C968 E6 8A     A LOA7   *       LDAB   DET1+$80,X GET CURRENT DETECTOR ERROR WORD
01592A C96A 58                 *       ASLB
01593                          *
01594                          *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 3
01595                          *
01596A C96B 58                 *       ASLB             ACTIVE STATE CHANGE ERROR?
01597A C96C 24 05 C973         *       BCC    LOA9      NO -- GO ON
01598A C96E 86 80     A        *       LDAA   #ERRBIT   YES -- FLAG THIS DETECTOR
01599A C970 BD C99C   A        *       JSR    ERSETT
01600A C973 BD C030   A LOA9   *       JSR    NEXTLN    LAST LANE?
01601A C976 24 E6 C95E         *       BCC    LOA1      NO  -- LOOP BACK
01602                          *
01603A C978 C6 01     A        *       LDAB   #$01      SET O/P LANE PTR
01604A C97A CE 0100   A        *       LDX    #$100     SET DETECTOR PTR
01605A C97D D7 F7     A        *       STAB   TEMP03    STORE O/P LANE PTR
01606A C97F A6 8A     A LOA12  *       LDAA   DET1+$80,X GET ERROR BIT
01607A C981 48                 *       ASLA             ERROR BIT SET?
01608A C982 24 04 C988         *       BCC    LOA11     NO
01609A C984 DA 8E     A        *       ORAB   DETER3    SET ALARM
01610A C986 D7 8E     A        *       STAB   DETER3    STORE ALARM
01611A C988 D6 F7     A LOA11  *       LDAB   TEMP03
01612A C98A 58                 *       ASLB             INCREMENT O/P LANE PTR
01613A C98B D7 F7     A        *       STAB   TEMP03    STORE PTR
01614A C98D 25 0C C99B         *       BCS    LOA13     ALL DONE?
01615A C98F DF F5     A        *       STX    TEMP01    STORE DETECTOR PTR
01616A C991 96 F4     A        *       LDAA   TEMP02
01617A C993 8B 10     A        *       ADDA   #$10      UPDATE DETECTOR PTR
01618A C995 97 F6     A        *       STAA   TEMP02    STORE IT!
01619A C997 DE F5     A        *       LDX    TEMP01    LOAD DETECTOR PTR
01620A C999 20 E4 C97F         *       BRA    LOA12
01621A C99B 39           LOA13 *       RTS
01622                          *
01623                          *
01624A C99C E6 8C     A ERSETT LDAB   LNDIS1+$80,X
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01625A C99E 26 04 C9A4          BNE    ER90
01626A C9A0 AA 8A     A         ORAA   DET1+$80,X
01627A C9A2 A7 8A     A         STAA   DET1+$80,X
01628A C9A4 39          ER90    RTS
01629                   *
01630                   *
01631                   *           MOTOROLA M68SAM CROSS-ASSMBLER PAGE 1
01632                   *
01633                   * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
01634                   * COPYRIGHT 1974 BY MOTOROLA INC
01635                   *
01636                   * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
01637                   * WRITTEN BY M.T.C. , RELEASE 2.0
01638                   *
01639                   * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
01640                   *
01641                   *        1981 08 26
01642                   *
01643                   *     RELEASE LEVEL 6.75
01644                   *
01645                   *        NAM    PCS7
01646                   *
01647                   * PCS7.AS  REV. 0.00
01648                   * STEVEN SKELTON
01649                   *
01650                   * THIS ROUTINE PROVIDES HOURLY DATA FOR THE O/P BUFFER
01651                   *
01652                   *
01653A C6A0              *        ORG    PCS7
01654                   *
01655A C6A0 D6 09     A         LDAB   HR          GET CURRENT TIME
01656A C6A2 27 02 C6A6          BEQ    G70
01657A C6A4 20 02 C6A8          BRA    G71
01658A C6A6 C6 24     A G70     LDAB   #$24
01659A C6A8 C5 20     A G71     BITB   #$20        START CORRECTION BCD-TO-BINARY
01660A C6AA 27 04 C6B0          BEQ    G1
01661A C6AC C0 0C     A         SUBB   #12
01662A C6AE 20 06 C6B6          BRA    G5
01663                   *
01664                   *        MOTOROLA M68SAM CROSS-ASSMBLER PAGE 2
01665                   *
01666A C6B0 C5 10     A G1      BITB   #$10
01667A C6B2 27 02 C6B6          BEQ    G5
01668A C6B4 C0 06     A         SUBB   #6
01669                   *
01670A C6B6 DE 9D     A G5      LDX    PTR         START OF HOUR VOL. BUFFERS
01671A C6B8 DF F8     A         STX    TEMP04
01672                   *
01673A C6BA 5A                  DECB
01674A C6BB 5D          G7      TSTB                COMPUTE ADDRESS OF HOUR BUFFER TO USE
01675A C6BC 27 0F C6CD          BEQ    G9
01676A C6BE 96 95     A         LDAA   SIZE
01677A C6C0 0C                  CLC
01678A C6C1 9B F9     A         ADDA   TEMP05
01679A C6C3 97 F9     A         STAA   TEMP05
01680A C6C5 24 03 C6CA          BCC    G51
01681A C6C7 7C 00F8   A         INC    TEMP04
01682A C6CA 5A          G51     DECB
```



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01683A C6CB 20 EE C6BB          BRA    G7
01684                   *
01685A C6CD DE F8     A G9      LDX    TEMP04
01686A C6CF D6 95     A         LDAB   SIZE
01687A C6D1 6F 00     A G11     CLR    0,X         CLEAR CURRENT BUFFER
01688A C6D3 08                  INX
01689A C6D4 5A                  DECB
01690A C6D5 26 FA C6D1          BNE    G11
01691                   *
01692A C6D7 96 16     A         LDAA   NVOL1
01693A C6D9 97 F5     A         STAA   TEMP01
01694A C6DB 4F                  CLRA
01695A C6DC 97 F7     A         STAA   TEMP03
01696A C6DE 97 FA     A         STAA   TEMP06
01697A C6E0 97 FB     A         STAA   TEMP07
01698                   *
01699A C6E2 DE FA     A G50     LDX    TEMP06
01700                   *
01701A C6E4 A6 18     A         LDAA   VOLDW1,X
01702                   *
01703A C6E6 97 F6     A         STAA   TEMP02
01704A C6E8 86 01     A         LDAA   #$01
01705A C6EA 97 A0     A         STAA   SPC1
01706A C6EC D6 F5     A         LDAB   TEMP01
01707A C6EE 27 06 C6F6          BEQ    G15
01708A C6F0 86 70     A         LDAA   #$70
01709A C6F2 97 A1     A         STAA   SPC2
01710A C6F4 20 08 C6FE          BRA    G10
01711A C6F6 D6 17     A G15     LDAB   NVOL2
01712A C6F8 27 5A C754          BEQ    G60
01713A C6FA 86 F0     A         LDAA   #$F0
01714A C6FC 97 A1     A         STAA   SPC2
01715                   *
01716A C6FE 96 F6     A G10     LDAA   TEMP02
01717A C700 DE A0     A         LDX    SPC1
01718A C702 96 F6     A G20     LDAA   TEMP02
01719A C704 0C                  CLC
01720A C705 48                  ASLA
01721A C706 97 F6     A         STAA   TEMP02
01722A C708 25 04 C70E          BCS    G45
01723A C70A 27 34 C740          BEQ    G30
01724A C70C 24 28 C736          BCC    G40
01725                   *
01726A C70E A6 08     A G45     LDAA   VD1M,X
01727A C710 E6 09     A         LDAB   VD1L,X
01728A C712 6F 08     A         CLR    VD1M,X
01729A C714 6F 09     A         CLR    VD1L,X
01730A C716 36                  PSHA
01731A C717 96 F7     A         LDAA   TEMP03
01732A C719 7F 00F7   A         CLR    TEMP03
01733A C71C 0C                  CLC
01734A C71D 9B F9     A         ADDA   TEMP05
01735A C71F 97 F9     A         STAA   TEMP05
01736A C721 24 03 C726          BCC    G52
01737A C723 7C 00F8   A         INC    TEMP04
01738A C726 32          G52     PULA
01739A C727 DE F8     A         LDX    TEMP04
01740                   *
```

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01741A C729 AB 00     A          ADDA   0,X
01742A C72B A7 00     A          STAA   0,X
01743                    *
01744A C72D 0C                   CLC
01745A C72E E9 01     A          ADCB   1,X
01746A C730 E7 01     A          STAB   1,X
01747A C732 24 02 C736           BCC    G40
01748A C734 6C 00     A          INC    0,X
01749                    *
01750A C736 96 A1     A G40      LDAA   SPC2
01751A C738 80 10     A          SUBA   #$10
01752A C73A 97 A1     A          STAA   SPC2
01753A C73C DE A0     A          LDX    SPC1
01754A C73E 20 C2 C702           BRA    G20
01755                    *
01756A C740 C6 02     A G30      LDAB   #02
01757A C742 D7 F7     A          STAB   TEMP03
01758A C744 D6 F5     A G35      LDAB   TEMP01
01759A C746 27 03 C74B           BEQ    G36
01760A C748 5A                   DECB
01761A C749 D7 F5     A          STAB   TEMP01
01762A C74B 96 FB     A G36      LDAA   TEMP07
01763A C74D 4C                   INCA
01764A C74E 97 FB     A          STAA   TEMP07
01765A C750 80 09     A          SUBA   #$09
01766A C752 26 8E C6E2           BNE    G50
01767                    *
01768A C754 39           G60     RTS
01769                    *
01770A C755    FF     A          FCB    $0FF
01771                    *
01772                    *
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01781                    * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
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01783                    *            1981 08 08
01784                    *
01785                    *       RELEASE LEVEL 6.75
01786                    *
01787                             NAM    PCS1A
01788                    * PCS1A. AS   REV. 1.00
01789                    * STEVEN SKELTON
01790                    *
01791                    * FOR TYPE 334 CABINET
01792                    *
01793                    * THIS ROUTINE PROVIDES CORRESPONDENCE BETWEEN HARDWARE DETECTOR
01794                    * ASSIGNMENTS (PORT NO. & BIT NO.) AND THE INTERNAL SOFTWARE
01795                    * DETECTOR ASSIGNMENTS
01796A CA00                      *
01797                             ORG    INPUT1
01798A CA00 86 50     A          LDAA   #$50
```

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01799A CA02 97 F5     A          STAA   TEMP01   SET UP MSB OF PORT ADDRESSES
01800A CA04 4F                   CLRA            SET POINTER FOR DETECTOR INPUT PROCESSING AREAS
01801A CA05 97 EA     A          STAA   INDEX
01802A CA07 97 EB     A          STAA   INDEX+1
01803                  *
01804                  *          MOTOROLA M68SAM CROSS-ASSMBLER PAGE 2
01805                  *
01806A CA09 97 CC     A          STAA   DATAOM+$20 CLEAR DETECTOR INPUT AREA
01807A CA0B 97 DC     A          STAA   DATAOM+$30
01808A CA0D CE CA3F   A          LDX    #DTRTB   POINTER TO DETECTOR HARDWARE ASSIGNMENT TABLE
01809A CA10 DF F8     A          STX    TEMP04
01810A CA12 C6 01     A IP1      LDAB   #1       SOFTWARE DETECTOR POSITION MASK
01811                  *
01812A CA14 37                IP2 PSHB           SAVE SOFTWARE DETECTOR ID
01813A CA15 A6 00     A          LDAA   0,X      GET LSB OF PORT ADDRESS
01814A CA17 97 F6     A          STAA   TEMP02   PUT IT NEXT TO MSB
01815A CA19 A6 01     A          LDAA   1,X      GET THE HARDWARE DETECTOR POSITION MASK
01816A CA1B DE F5     A          LDX    TEMP01   INPUT PORT ADDRESS IN X
01817A CA1D A4 00     A          ANDA   0,X      SEE IF A CAR OVER DETECTOR
01818A CA1F 27 08 CA29           BEQ    NXDET    NO --
01819A CA21 DE EA     A          LDX    INDEX    YES -- GET SOFTWARE DETECTOR PROCESSING INDEX
01820A CA23 EA CC     A          ORAB   DATAOM+$20,X SET THE INTERNAL DETECTOR BIT
01821A CA25 E4 E0     A          ANDB   DTCTRM+$20,X KEEP ONLY ENABLED DETECTORS
01822A CA27 E7 CC     A          STAB   DATAOM+$20,X PUT AWAY THE INTERNAL DETECTOR INPUT WORD
01823                  *
01824A CA29 DE F8     A NXDET    LDX    TEMP04   HARDWARE DETECTOR TABLE INDEX
01825A CA2B 08                   INX
01826A CA2C 08                   INX             FIX THE INDEX FOR NEXT ENTRY
01827A CA2D DF F8     A          STX    TEMP04   SAVE THE INDEX
01828A CA2F 33                   PULB            GET THE SOFTWARE DETECTOR POSITON BIT
01829                  *
01830A CA30 58                   ASLB            SHIFT IT LEFT
01831A CA31 24 E1 CA14           BCC    IP2      NOT DONE WITH THIS GROUP YET
01832A CA33 7D 00EB   A IP5      TST    INDEX+1  ARE WE ON FIRST GROUP OF DETECTORS?
01833A CA36 26 06 CA3E           BNE    DO       NO -- WE'RE DONE
01834A CA38 86 10     A IP3      LDAA   #$10     YES -- LETS FIX SOFTWARE DETECTOR AREA INDEX FOR SECOND GROUP
01835A CA3A 97 EB     A          STAA   INDEX+1
01836A CA3C 20 D4 CA12           BRA    IP1      GO DO THIS GROUP
01837                  *
01838A CA3E 39                DO RTS             GO PROCESS THE DETECTORS
01839                  *
01840                  *
01841                  *          MMTOROLA M68SAM CROSS-ASSMBLER PAGE 3
01842                  *
01843A CA3F     02     A DTRTB  FCB    $02      DIRECTION ONE
01844A CA40     01     A        FCB    TBIT0    LANE NINE
01845A CA41     02     A        FCB    $02
01846A CA42     02     A        FCB    TBIT1    LANE TEN
01847A CA43     02     A        FCB    $02
01848A CA44     04     A        FCB    TBIT2    LANE ELEVEN
01849A CA45     02     A        FCB    $02
01850A CA46     08     A        FCB    TBIT3    LANE TWELEVE
01851A CA47     02     A        FCB    $02
01852A CA48     10     A        FCB    TBIT4    LANE THIRTEEN
01853A CA49     02     A        FCB    $02
01854A CA4A     20     A        FCB    TBIT5    LANE FOURTEEN
01855A CA4B     02     A        FCB    $02
01856A CA4C     40     A        FCB    TBIT6    LANE FIFTEEN
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01857A CA4D    02    A        FCB    $02
01858A CA4E    80    A        FCB    TBIT7    LANE SIXTEEN
01859                 *
01860A CA4F    06    A        FCB    $06      DIRECTION TWO
01861A CA50    01    A        FCB    TBIT0    LALE NINE
01862A CA51    06    A        FCB    $06
01863A CA52    02    A        FCB    TBIT1    LANE TEN
01864A CA53    06    A        FCB    $06
01865A CA54    04    A        FCB    TBIT2    LANE ELEVEN
01866A CA55    06    A        FCB    $06
01867A CA56    08    A        FCB    TBIT3    LANE TWELEVE
01868A CA57    06    A        FCB    $06
01869A CA58    10    A        FCB    TBIT4    LANE THIRTHEN
01870A CA59    06    A        FCB    $06
01871A CA5A    20    A        FCB    TBIT5    LANE FOURTEEN
01872A CA5B    06    A        FCB    $06
01873A CA5C    40    A        FCB    TBIT6    LANE FIFTEEN
01874A CA5D    06    A        FCB    $06
01875A CA5E    80    A        FCB    TBIT7    LANE SIXTEEN
01876                 *
01877A CA5F    FFFF  A        FDB    $0FFFF
01878A CA61    FFFF  A        FDB    $0FFFF
01879A CA63    FF    A        FCB    $0FF
01880                 *
01881                 *          MOTOROLA M68SAM CROSS-ASSMBLER PAGE 1
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01887                 * CALTRANS TO M.T.C. MODIFIED, RELEASE 2.0
01888                 *
01889                 * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
01890                 *
01891                 *             1981 07 03
01892                 *
01893                 *       RELEASE LEVEL 6.75
01894                 *
01895                 *       NAM    PCS2
01896                 *
01897                 * PCS2 AS   REV. 1.00
01898                 * STEVEN SKELTON
01899                 *
01900                 * THIS ROUTINE PROCESSES THE DETECTOR INPUTS
01901                 *
01902                 * THE RAW INPUTS ARE VERIFIED AND THEN UTILIZED
01903                 * BY THE CONTROLLER.
01904                 *
01905                 * DATAOH AND DATAOL ARE THE CURRENT DETECTOR INPUTS
01906                 * AND DETINH AND DETINL ARE THE VERIFIED INPUTS.
01907                 *
01908                 *
01909                 *          MOTOROLA M68SAM CROSS-ASSMBLER PAGE 2
01910                 *
01911A C350                    ORG    PCS2
01912A C350 BD C2A0  A         JSR    INPUT    INPUT THE DETECTORS
01913A C353 BD CA00  A         JSR    INPUTT
01914A C356 20 04 C35E         BRA    S0
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PAGE  034  LUCK     .SA:1  PCS2

01915A C358 01                    NOP
01916A C359 01                    NOP
01917A C35A 01                    NOP
01918A C35B 01                    NOP
01919A C35C 01                    NOP
01920                          *
01921                          * SINGLE SAMPLE ERROR CORRECTION ROUTINE
01922                          *
01923A C35D 01                    NOP
01924A C35E 86 02     A S0        LDAA    #2        TWICE THRU LOOP
01925A C360 97 FB     A           STAA    TEMP04    INITIALIZE LOOP COUNTER
01926A C362 4C                    INCA
01927A C363 97 F9     A           STAA    TEMP05
01928A C365 CE 00BC   A           LDX     #DATA0L
01929A C368 DF FA     A           STX     TEMP06
01930A C36A CE 00AC   A           LDX     #DATA0M   INITIALIZE INDEX REGISTER TO MSB'S
01931                          *
01932A C36D E6 00     A S1        LDAB    0,X       DATA0
01933A C36F E4 14     A           ANDB    DTCTRM-DATA0M,X MASK UNWANTED DETECTORS
01934A C371 37                    PSHB              SAVE DATA0
01935A C372 E8 01     A           EORB    1,X       DATA0. XOR. DATA1=(ACCB)    .
01936A C374 A6 01     A           LDAA    1,X       DATA1
01937A C376 A8 02     A           EORA    2,X       DATA1. XOR. DETIN(OLD)
01938A C378 A7 00     A           STAA    0,X       SAVE FOR NEXT OPERATION
01939A C37A E4 00     A           ANDB    0,X       (DATA0. XOR. DATA1).AND.(DATA1. XOR.DETIN)=(ACCB)
01940A C37C E8 01     A           EORB    1,X       (ACCB).XOR.DATA1 - NEW DETIN!
01941                          *
01942A C37E 32                    PULA              DATA0
01943A C37F A7 01     A           STAA    1,X       PUT IN DATA1 SLOT FOR NEXT TIME THROUGH
01944A C381 A8 02     A           EORA    2,X       DATA0. XOR. DETIN=(ACCA)
01945A C383 A4 00     A           ANDA    0,X       (DATA0. XOR. DETIN).AND.(DATA1.XOR.DETIN)=(ACCA)
01946A C385 A7 03     A           STAA    3,X       NEW STATE CHANGE WORD
01947A C387 E7 02     A           STAB    2,X       VERIFIED DETECTOR INPUT - DETIL
01948                          *
01949                          *       MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 3
01950                          *
01951A C389 DE FA     A           LDX     TEMP06
01952A C38B 7A 00FB   A           DEC     TEMP04    DECREMENT LOOP COUNTER
01953A C38E 26 DD C36D            BNE     S1        FIRST TIME THROUGH GO BACK TO B1
01954A C390 96 FB     A           LDAA    TEMP07
01955A C392 8B 10     A           ADDA    #$10
01956A C394 97 FB     A           STAA    TEMP07
01957A C396 DE FA     A           LDX     TEMP06
01958A C398 7C 00F8   A           INC     TEMP04
01959A C39B 7A 00F9   A           DEC     TEMP05
01960A C39E 26 CD C36D            BNE     S1
01961                          *
01962A C3A0 39                    RTS
01963                          *           MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
01964                          *
01965                          *
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01969                          * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
01970                          * CALTRANS TO M.T.C. MODIFIED, RELEASE 2.0
01971                          *
01972                          * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
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01973                          *
01974                          *            1981 07 03
01975                          *
01976                          *       RELEASE LEVEL 6.75
01977                          *
01978                                NAM    PCS3
01979                          *
01980                          * PCS3. AS  REV. 1.00
01981                          * STEVEN SKELTON
01982                          *
01983                          *  UPSTREAM DETECTOR  SERVICING ROUTINE
01984                          *
01985                          * THIS ROUTINE SERVICES EIGHT LANE DETECTORS IN ONE DIRECTION.
01986                          * THE ROUTINE ADDS THE INDIVIDUAL COUNTS TO THE SIX SECOND
01987                          * OCCUPANCY AND VOLUME COUNTERS.
01988                          *
01989A D4A0                          ORG    PCS3
01990A D4A0 BD C040  A               JSR    SETUP
01991A D4A3 86 80    A               LDAA   #TBIT7   LOAD THE LANE DETECTOR MASK
01992A D4A5 97 F7    A               STAA   TEMP03
01993                          *
01994A D4A7 DF F5    A T1        STX    TEMP01
01995A D4A9 7C 00F5  A           INC    TEMP01
01996A D4AC DE F5    A           LDX    TEMP01
01997A D4AE 96 F7    A           LDAA   TEMP03
01998A D4B0 95 B0    A           BITA   GO
01999A D4B2 27 0B D4BF           BEQ    T20
02000A D4B4 0C                   CLC
02001A D4B5 86 01    A           LDAA   #01
02002A D4B7 A9 00    A           ADCA   B1E,X
02003A D4B9 A7 00    A           STAA   B1E,X
02004A D4BB 24 02 D4BF           BCC    T20
02005A D4BD 6C 08    A           INC    C1E,X
02006A D4BF 96 F7    A T20       LDAA   TEMP03
02007A D4C1 95 B1    A           BITA   GOT
02008A D4C3 27 02 D4C7           BEQ    T21
02009A D4C5 6C 01    A           INC    B1S,X
02010                          *
02011A D4C7 DF F5    A T21       STX    TEMP01
02012A D4C9 7A 00F5  A           DEC    TEMP01
02013A D4CC DE F5    A           LDX    TEMP01
02014A D4CE 95 AE    A           BITA   DETINM   IS THIS M.L. DETECTOR OCCUPIED?
02015A D4D0 26 1A D4EC           BNE    T16       IF SO, GO TO L16
02016                          *
02017                          *       MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 2
02018                          *
02019A D4D2 95 AF    A T2        BITA   STCHGM   HAS THE STATE CHANGED?
02020A D4D4 27 22 D4F8           BEQ    T14       IF NOT, GET ANOTHER LANE
02021                          *
02022A D4D6 6C 01    A           INC    VSIX1,X  INCREMENT THIS LANE'S SIX SECOND VOLUME
02023                          *
02024A D4D8 16                   TAB
02025A D4D9 53                   COMB
02026A D4DA D4 AF    A           ANDB   STCHGM
02027A D4DC D7 AF    A           STAB   STCHGM
02028                          *
02029A D4DE 9A B0    A           ORAA   GO
02030A D4E0 97 B0    A           STAA   GO
```

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02031                          *
02032A D4E2 6F 0B    A         CLR    STCHG1,X CLEAR STATE CHANGE COUNT
02033A D4E4 C6 BF    A         LDAB   #$0BF    MASK FOR ACTIVE STATE CHANGE ERROR BIT
02034A D4E6 E4 0A    A         ANDB   DET1,X   RESET THE BIT
02035A D4E8 E7 0A    A         STAB   DET1,X   SAVE THE OTHERS
02036A D4EA 20 0C D4F8         BRA    T14      CHECK ANOTHER LANE
02037                          *
02038A D4EC 6C 00    A T16     INC    OSIX1,X  INCREMENT OCCUPANCY COUNT
02039                          *
02040A D4EE 6C 0F    A         INC    OCC,X
02041A D4F0 95 AF    A         BITA   STCHGM
02042A D4F2 27 04 D4F8         BEQ    T14
02043                          *
02044A D4F4 9A B1    A         ORAA   GOT
02045A D4F6 97 B1    A         STAA   GOT
02046                          *
02047A D4F8 44               T14   LSRA             SHIFT DETECTOR MASK FOR NEXT LANE
02048A D4F9 97 F7    A         STAA   TEMP03
02049A D4FB BD C030  A         JSR    NEXTLN   ARE WE DONE?
02050A D4FE 24 A7 D4A7         BCC    T1       IF NOT FINISHED, GO BACK FOR NEXT LANE
02051A D500 39                 RTS
02052                          *
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02061                          * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
02062                          *
02063                          *             1981 07 03
02064                          *
02065                          *       RELEASE LEVEL 6.75
02066                          *
02067                                NAM    PCS3A
02068                          *
02069                          * PCS3A. AS  REV. 1.00
02070                          * STEVEN SKELTON
02071                          *
02072                          *  UPSTREAM DETECTOR  SERVICING ROUTINE
02073                          *
02074                          * THIS ROUTINE SERVICES EIGHT LANE DETECTORS IN ONE DIRECTION.
02075                          * THE RHUTINE ADDS THE INDIVIDUAL COUNTS TO THE SIX SECOND
02076                          * OCCUPANCY AND VOLUME COUNTERS.
02077                          *
02078A D550                    ORG    PCS3A
02079                          *
02080A D550 BD C060  A         JSR    SETUP    POSITION X REG. FOR MAIN LANE DATA
02081A D553 86 80    A         LDAA   #TBIT7   LOAD THE LANE DETECTOR MASK
02082A D555 97 F7    A         STAA   TEMP03
02083                          *
02084A D557 DF F5    A TA1     STX    TEMP01
02085A D559 7C 00F5  A         INC    TEMP01
02086A D55C DE F5    A         LDX    TEMP01
02087A D55E 96 F7    A         LDAA   TEMP03
02088A D560 95 B2    A         BITA   GOA
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02089A D562 27 0B D56F          BEQ     TA20
02090A D564 0C                  CLC
02091A D565 86 01     A         LDAA    #01
02092A D567 A9 02     A         ADCA    B2E,X
02093A D569 A7 02     A         STAA    B2E,X
02094A D56B 24 02 D56F          BCC     TA20
02095A D56D 6C 0A     A         INC     C2E,X
02096A D56F 96 F7     A TA20    LDAA    TEMP03
02097A D571 95 B3     A         BITA    GOTA
02098A D573 27 02 D577          BEQ     TA21
02099A D575 6C 03     A         INC     B2S,X
02100                   *
02101A D577 DF F5     A TA21    STX     TEMP01
02102A D579 7A 00F5   A         DEC     TEMP01
02103A D57C DE F5     A         LDX     TEMP01
02104A D57E 95 BE     A         BITA    DETINL  IS THIS M.L. DETECTOR OCCUPIED?
02105A D580 26 14 D596          BNE     TA16    IF SO, GO TO L16
02106                   *
02107                   *       MOTOROLA M68SAM CROSS-ASSMBLER PAGE 2
02108                   *
02109A D582 95 BF     A TA2     BITA    STCHGL  HAS THE STATE CHANGED?
02110A D584 27 1C D5A2          BEQ     TA14    IF NOT, GET ANOTHER LANE
02111                   *
02112A D586 6C 81     A         INC     VSIX1+$80,X INCREMENT THIS LANE'S SIX SECOND VOLUME
02113                   *
02114A D588 9A B2     A         ORAA    GOA
02115A D58A 97 B2     A         STAA    GOA
02116                   *
02117A D58C 6F 8B     A         CLR     STCHG1+$80,X CLEAR STATE CHANGE COUNT
02118A D58E C6 BF     A         LDAB    #$0BF   MASK FOR ACTIVE STATE CHANGE ERROR BIT
02119A D590 E4 8A     A         ANDB    DET1+$80,X RESET THE BIT
02120A D592 E7 8A     A         STAB    DET1+$80,X SAVE THE OTHERS
02121A D594 20 0C D5A2          BRA     TA14    CHECK ANOTHER LANE
02122                   *
02123A D596 6C 80     A TA16    INC     OSIX1+$80,X INCREMENT OCCUPANCY COUNT
02124                   *
02125A D598 6C 8F     A         INC     OCC+$80,X
02126A D59A 95 BF     A         BITA    STCHGL
02127A D59C 27 04 D5A2          BEQ     TA14
02128A D59E 9A B3     A         ORAA    GOTA
02129A D5A0 97 B3     A         STAA    GOTA
02130                   *
02131A D5A2 44                  TA14    LSRA            SHIFT DETECTOR MASK FOR NEXT LANE
02132A D5A3 97 F7     A         STAA    TEMP03
02133A D5A5 BD C030   A         JSR     NEXTLN  ARE WE DONE?
02134A D5A8 24 AD D557          BCC     TA1     IF NOT FINISHED, GO BACK FOR NEXT LANE
02135A D5AA 39                  RTS
02136                   *
02137                   *          MOTOROLA M68SAM CROSS-ASSMBLER PAGE 1
02138                   *
02139                   * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
02140                   *        COPYRIGHT 1974 BY MOTOROLA INC
02141                   *
02142                   * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
02143                   * CALTRANS TO M.T.C. MODIFIED, RELEASE 2.0
02144                   *
02145                   * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
02146                   *
```

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02147                    *            1982 03 16
02148                    *
02149                    *       RELEASE LEVEL 6.75
02150                    *
02151                           NAM    PCS3B
02152                    *
02153                    * PCS3B. AS  REV. 0.00
02154                    * STEVEN SKELTON
02155                    *
02156                    *  DOWNSTREAM DETECTOR  SERVICING ROUTINE
02157                    *
02158                    * THIS ROUTINE SERVICES EIGHT LANE DETECTORS IN ONE DIRECTION.
02159                    *
02160A CBB0                      ORG    PCS3B
02161A CBB0 BD C060  A           JSR    SETUP
02162A CBB3 B6 80    A           LDAA   #1BIT7   LOAD THE LANE DETECTOR MASK
02163                    *
02164A CBB5 95 CE    A TB1       BITA   DETINH+$20 IS THIS M.L. DETECTOR OCCUPIED?
02165A CBB7 26 0D CBC6           BNE    TB16     IF SO, GO TO L16
02166                    *
02167                    *        MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 2
02168                    *
02169A CBB9 95 CF    A TB2       BITA   STCHGM+$20 HAS THE STATE CHANGED?
02170A CBBB 27 14 CBD1           BEQ    TB14     IF NOT, GET ANOTHER LANE
02171                    *
02172A CBBD 16                   TAB
02173A CBBE 43                   COMA
02174A CBBF 94 B0    A           ANDA   GO
02175A CBC1 97 B0    A           STAA   GO
02176A CBC3 17                   TBA
02177A CBC4 20 0B CBD1           BRA    TB14
02178                    *
02179A CBC6 95 CF    A TB1A      BITA   STCHGM+$20
02180A CBC8 27 07 CBD1           BEQ    TB14
02181A CBCA 16                   TAB
02182A CBCB 43                   COMA
02183A CBCC 94 B1    A           ANDA   GOT
02184A CBCE 97 B1    A           STAA   GOT
02185A CBD0 17                   TBA
02186                    *
02187A CBD1 44           TB14    LSRA           SHIFT DETECTOR MASK FOR NEXT LANE
02188A CBD2 BD C030  A           JSR    NEXTLN   ARE WE DONE?
02189A CBD5 24 DE CBB5           BCC    TB1      IF NOT FINISHED, GO BACK FOR NEXT LANE
02190A CBD7 39                   RTS
02191                    *
02192                    *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
02193                    *
02194                    * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
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02196                    *
02197                    * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
02198                    * CALTRANS TO M.T.C. MODIFIED, RELEASE 2.0
02199                    *
02200                    * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
02201                    *
02202                    *            1982 03 16
02203                    *
02204                    *       RELEASE LEVEL 6.75
```

```
02205                    *
02206                          NAM    PCS3C
02207                    *
02208                    * PCS3C. AS  REV. 0.00
02209                    * STEVEN SKELTON
02210                    *
02211                    *  DOWNSTREAM DETECTOR  SERVICING ROUTINE
02212                    *
02213                    * THIS ROUTINE SERVICES EIGHT LANE DETECTORS IN ONE DIRECTION.
02214                    *
02215A CC00                      ORG    PCS3C
02216                    *
02217A CC00 BD C060  A           JSR    SETUP    POSITION X REG. FOR MAIN LANE DATA
02218A CC03 86 80    A           LDAA   #TBIT7   LOAD THE LANE DETECTOR MASK
02219                    *
02220A CC05 95 DE    A TC1       BITA   DETINL+$20 IS THIS M.L. DETECTOR OCCUPIED?
02221A CC07 26 0D CC16           BNE    TC16     IF SO, GO TO L16
02222                    *
02223                    *         MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 2
02224                    *
02225A CC09 95 DF    A TC2       BITA   STCHGL+$20 HAS THE STATE CHANGED?
02226A CC0B 27 14 CC21           BEQ    TC14     IF NOT, GET ANOTHER LANE
02227                    *
02228A CC0D 16                   TAB
02229A CC0E 43                   COMA
02230A CC0F 94 B2    A           ANDA   GOA
02231A CC11 97 B2    A           STAA   GOA
02232A CC13 17                   TBA
02233A CC14 20 0B CC21           BRA    TC14     CHECK ANOTHER LANE
02234                    *
02235A CC16 95 DF    A TC16      BITA   STCHGL+$20
02236A CC18 27 07 CC21           BEQ    TC14
02237A CC1A 16                   TAB
02238A CC1B 43                   COMA
02239A CC1C 94 B3    A           ANDA   GOTA
02240A CC1E 97 B3    A           STAA   GOTA
02241A CC20 17                   TBA
02242                    *
02243A CC21 44           TC14    LSRA            SHIFT DETECTOR MASK FOR NEXT LANE
02244A CC22 BD C030  A           JSR    NEXTLN   ARE WE DONE?
02245A CC25 24 DE CC05           BCC    TC1      IF NOT FINISHED, GO BACK FOR NEXT LANE
02246A CC27 39                   RTS
02247                    *
02248                    *         MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
02249                    *
02250                    * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
02251                    * COPYRIGHT 1974 BY MOTOROLA INC
02252                    *
02253                    * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
02254                    * WRITTEN BY M.T.C. , RELEASE 2.0
02255                    *
02256                    * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
02257                    *
02258                    *       1982 03 16
02259                    *
02260                    *    RELEASE LEVEL 6.75
02261                    *
02262                          NAM    PCS7A
```

```
                        *
                        * PCS7A AS  REV. 0.00
                        * STEVEN SKELTON
                        *
                        * THIS ROUTINE PROVIDES HOURLY DATA FOR THE D/P BUFFER
                        *
                        *
02270A CF00                     ORG     PCS7A
02271                   *
02272A CF00 D6 09     A         LDAB    HR        GET CURRENT TIME
02273A CF02 27 02 CF06          BEQ     GA70
02274A CF04 20 02 CF08          BRA     GA71
02275A CF06 C6 24     A GA70    LDAB    #$24
02276A CF08 C5 20     A GA71    BITB    #$20      START CORRECTION BCD-TO-BINARY
02277A CF0A 27 04 CF10          BEQ     GA1
02278A CF0C C0 0C     A         SUBB    #12
02279A CF0E 20 06 CF16          BRA     GA5
02280                   *
02281                   *         MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 2
02282                   *
02283A CF10 C5 10     A GA1     BITB    #$10
02284A CF12 27 02 CF16          BEQ     GA5
02285A CF14 C0 06     A         SUBB    #6
02286                   *
02287A CF16 DE 96     A GA5     LDX     PTRL      START OF LENGTH DATA  BUFFERS
02288A CF18 DF F8     A         STX     TEMP04
02289                   *
02290A CF1A 5A                  DECB
02291A CF1B 5D                GA7 TSTB            COMPUTE ADDRESS OF HOUR BUFFER TO USE
02292A CF1C 27 0F CF2D          BEQ     GA9
02293A CF1E 96 95     A         LDAA    SIZE
02294A CF20 0C                  CLC
02295A CF21 9B F9     A         ADDA    TEMP05
02296A CF23 97 F9     A         STAA    TEMP05
02297A CF25 24 03 CF2A          BCC     GA51
02298A CF27 7C 00F8   A         INC     TEMP04
02299A CF2A 5A                GA51 DECB
02300A CF2B 20 EE CF1B          BRA     GA7
02301                   *
02302A CF2D DE F8     A GA9     LDX     TEMP04
02303A CF2F D6 95     A         LDAB    SIZE
02304A CF31 6F 00     A GA11    CLR     0,X       CLEAR CURRENT BUFFER
02305A CF33 08                  INX
02306A CF34 5A                  DECB
02307A CF35 26 FA CF31          BNE     GA11
02308                   *
02309A CF37 96 16     A         LDAA    NVOL1
02310A CF39 97 F5     A         STAA    TEMP01
02311A CF3B 4F                  CLRA
02312A CF3C 97 F7     A         STAA    TEMP03
02313A CF3E 97 FA     A         STAA    TEMP06
02314A CF40 97 FB     A         STAA    TEMP07
02315                   *
02316A CF42 DE FA     A GA50    LDX     TEMP06
02317                   *
02318A CF44 A6 18     A         LDAA    VOLDW1,X
02319                   *
02320A CF46 97 F6     A         STAA    TEMP02
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02321A CF48 86 01     A         LDAA    #$01
02322A CF4A 97 A0     A         STAA    SPC1
02323A CF4C D6 F5     A         LDAB    TEMP01
02324A CF4E 27 06 CF56          BEQ     GA15
02325A CF50 86 70     A         LDAA    #$70
02326A CF52 97 A1     A         STAA    SPC2
02327A CF54 20 08 CF5E          BRA     GA10
02328A CF56 D6 17     A GA15    LDAB    NVOL2
02329A CF58 27 5A CF84          BEQ     GA60
02330A CF5A 86 F0     A         LDAA    #$F0
02331A CF5C 97 A1     A         STAA    SPC2
02332                   *
02333A CF5E 96 F6     A GA10    LDAA    TEMP02
02334A CF60 DE A0     A         LDX     SPC1
02335A CF62 96 F6     A GA20    LDAA    TEMP02
02336A CF64 0C                  CLC
02337A CF65 48                  ASLA
02338A CF66 97 F6     A         STAA    TEMP02
02339A CF68 25 04 CF6E          BCS     GA45
02340A CF6A 27 34 CFA0          BEQ     GA30
02341A CF6C 24 28 CF96          BCC     GA40
02342                   *
02343A CF6E A6 0D     A GA45    LDAA    LENM,X
02344A CF70 E6 0E     A         LDAB    LENL,X
02345A CF72 6F 0D     A         CLR     LENM,X
02346A CF74 6F 0E     A         CLR     LENL,X
02347A CF76 36                  PSHA
02348A CF77 96 F7     A         LDAA    TEMP03
02349A CF79 7F 00F7   A         CLR     TEMP03
02350A CF7C 0C                  CLC
02351A CF7D 9B F9     A         ADDA    TEMP05
02352A CF7F 97 F9     A         STAA    TEMP05
02353                   *
02354A CF81 24 03 CF86          BCC     GA52
02355A CF83 7C 00F8   A         INC     TEMP04
02356A CF86 32                GA52 PULA
02357A CF87 DE F8     A         LDX     TEMP04
02358                   *
02359A CF89 AB 00     A         ADDA    0,X
02360A CF8B A7 00     A         STAA    0,X
02361                   *
02362A CF8D 0C                  CLC
02363A CF8E E9 01     A         ADCB    1,X
02364A CF90 E7 01     A         STAB    1,X
02365A CF92 24 02 CF9A          BCC     GA40
02366A CF94 6C 00     A         INC     0,X
02367                   *
02368A CF96 96 A1     A GA40    LDAA    SPC2
02369A CF98 80 10     A         SUBA    #$10
02370A CF9A 97 A1     A         STAA    SPC2
02371A CF9C DE A0     A         LDX     SPC1
02372A CF9E 20 C2 CF62          BRA     GA20
02373                   *
02374A CFA0 C6 02     A GA30    LDAB    #02
02375A CFA2 D7 F7     A         STAB    TEMP03
02376A CFA4 D6 F5     A GA35    LDAB    TEMP01
02377A CFA6 27 03 CFAB          BEQ     GA3e
02378A CFA8 5A                  DECB
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PAGE  042  LUCK    .SA:1  PCS7A

02379A CFA9 D7 F5     A         STAB   TEMP01
02380A CFAB 96 FB     A GA36    LDAA   TEMP07
02381A CFAD 4C                  INCA
02382A CFAE 97 FB     A         STAA   TEMP07
02383A CFB0 80 09     A         SUBA   #$09
02384A CFB2 26 8E CF42          BNE    GA50
02385                     *
02386A CFB4 39                  GA60   RTS
02387                     *
02388A CFB5    FF     A         FCB    $0FF
02389                     *
02390                     *          MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
02391                     *
02392                     * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
02393                     * COPYRIGHT 1974 BY MOTOROLA INC
02394                     *
02395                     * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
02396                     * WRITTEN BY M.T.C. , RELEASE 2.0
02397                     *
02398                     * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
02399                     *
02400                     *       1982 03 17
02401                     *
02402                     *    RELEASE LEVEL 6.75
02403                     *
02404                     *       NAM    PCS8
02405                     *
02406                     * PCS8 AS  REV. 0.00
02407                     * STEVEN SKELTON
02408                     *
02409                     * THIS ROUTINE ACCOUNTS FOR VEHICLE SPEED CLASSIFICATION.
02410                     * IT TREATS LANES AFFECTED BY PCS3 AND PCS3B.
02411                     *
02412A CC50                        ORG    PCS8
02413                     *
02414A CC50 86 07     A           LDAA   #7
02415A CC52 97 E8     A           STAA   COUNT6
02416A CC54 96 E5     A           LDAA   COUNT3
02417A CC56 27 04 CC5C            BEQ    SP99
02418A CC58 7F 00E5   A           CLR    COUNT3
02419A CC5B 39                    RTS
02420A CC5C 86 01     A SP99      LDAA   #01
02421A CC5E 97 E5     A           STAA   COUNT3
02422                     *
02423A CC60 CE 0270   A           LDX    #$0270
02424A CC63 86 80     A           LDAA   #$80
02425A CC65 DF EA     A           STX    INDEX
02426A CC67 97 E3     A           STAA   COUNT1
02427A CC69 96 E3     A SP17      LDAA   COUNT1
02428A CC6B 94 80     A           ANDA   GO
02429A CC6D 26 67 CCD6            BNE    SP11
02430A CC6F E6 08     A           LDAB   C1E,X
02431A CC71 27 0A CC7D            BEQ    SP49
02432A CC73 6F 08     A SP59      CLR    C1E,X
02433A CC75 6F 00     A           CLR    B1E,X
02434A CC77 6F 0F     A           CLR    OCC,X
02435A CC79 6F 01     A           CLR    B1S,X
02436A CC7B 20 59 CCD6            BRA    SP11
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PAGE  043  LUCK    .SA:1  PCS8

02437A CC7D E6 00     A SP49      LDAB   B1E,X
02438A CC7F 27 55 CCD6            BEQ    SP11
02439A CC81 D1 E8     A           CMPB   COUNT6
02440A CC83 2B EE CC73            BMI    SP59
02441A CC85 6F 00     A           CLR    B1E,X
02442A CC87 DF F6     A           STX    TEMP02
02443A CC89 D7 F8     A           STAB   TEMP04
02444A CC8B A6 04     A           LDAA   LS,X
02445A CC8D 97 F9     A           STAA   TEMP05
02446A CC8F BD C9E0   A           JSR    DIV
02447A CC92 D6 FA     A           LDAB   TEMP06
02448A CC94 D7 F5     A           STAB   TEMP01
02449A CC96 DE F6     A           LDX    TEMP02
02450A CC98 E6 01     A           LDAB   B1S,X
02451A CC9A 6F 01     A           CLR    B1S,X
02452A CC9C DF F6     A           STX    TEMP02
02453A CC9E D7 F8     A           STAB   TEMP04
02454A CCA0 A6 04     A           LDAA   LS,X
02455A CCA2 97 F9     A           STAA   TEMP05
02456A CCA4 BD C9E0   A           JSR    DIV
02457                     *
02458A CCA7 86 01     A           LDAA   #01
02459A CCA9 97 EA     A           STAA   INDEX
02460A CCAB DE EA     A           LDX    INDEX
02461                     *
02462                     *
02463A CCAD D6 FA     A           LDAB   TEMP06
02464A CCAF DB F5     A           ADDB   TEMP01
02465A CCB1 57                    ASRB
02466A CCB2 D7 F5     A           STAB   TEMP01
02467A CCB4 D7 F8     A           STAB   TEMP04
02468A CCB6 A6 0F     A           LDAA   OCC,X
02469A CCB8 6F 0F     A           CLR    OCC,X
02470A CCBA 97 F9     A           STAA   TEMP05
02471A CCBC BD C9B0   A           JSR    MULT
02472A CCBF D6 FB     A           LDAB   TEMP07
02473                     *
02474A CCC1 86 02     A           LDAA   #02
02475A CCC3 97 EA     A           STAA   INDEX
02476A CCC5 DE EA     A           LDX    INDEX
02477                     *
02478A CCC7 E0 06     A           SUBB   LD,X
02479A CCC9 D1 A3     A           CMPB   TRUCK
02480A CCCB 2B 17 CCE4            BMI    SP2
02481A CCCD 0C                    CLC
02482                     *
02483A CCCE 86 01     A           LDAA   #01
02484A CCD0 97 EA     A           STAA   INDEX
02485A CCD2 DE EA     A           LDX    INDEX
02486                     *
02487A CCD4 20 04 CCDA            BRA    SP9
02488A CCD6 20 56 CD2E SP11       BRA    SP1
02489A CCD8 20 8F CC69 SP7        BRA    SP17
02490A CCDA A6 0E     A SP9       LDAA   LENL,X
02491A CCDC 89 01     A           ADCA   #1
02492A CCDE A7 0E     A           STAA   LENL,X
02493A CCE0 24 02 CCE4            BCC    SP2
02494A CCE2 6C 0D     A           INC    LENM,X
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02495                          *
02496A CCE4 CE 0200  A SP2     LDX    #$0200
02497A CCE7 D6 F5    A         LDAB   TEMP01
02498A CCE9 E1 B0    A SP4     CMPB   SPD,X
02499A CCEB 2E 29 CD16         BGT    SP12
02500A CCED 2A 20 CD0F         BPL    SP3
02501A CCEF 08               SP6     INX
02502A CCF0 8C 020B  A         CPX    #$020B
02503A CCF3 26 F4 CCE9         BNE    SP4
02504A CCF5 0C                 CLC
02505A CCF6 A6 C0    A         LDAA   SPED+$20,X
02506A CCF8 89 01    A         ADCA   #1
02507A CCFA A7 C0    A         STAA   SPED+$20,X
02508A CCFC 24 0F CD0D         BCC    SP5
02509A CCFE 0C                 CLC
02510A CCFF A6 B0    A         LDAA   SPED+$10,X
02511A CD01 89 01    A         ADCA   #1
02512A CD03 A7 B0    A         STAA   SPED+$10,X
02513A CD05 24 06 CD0D         BCC    SP5
02514A CD07 A6 A0    A         LDAA   SPED,X
02515A CD09 8B 01    A         ADDA   #1
02516A CD0B A7 A0    A         STAA   SPED,X
02517A CD0D 20 1F CD2E SP5     BRA    SP1
02518                          *
02519A CD0F 96 FA    A SP3     LDAA   TEMP06
02520A CD11 A1 90    A         CMPA   REM,X
02521A CD13 2A 01 CD16         BPL    SP12
02522A CD15 08                 INX
02523
02524A CD16 0C               SP12    CLC
02525A CD17 A6 C0    A         LDAA   SPED+$20,X
02526A CD19 89 01    A         ADCA   #1
02527A CD1B A7 C0    A         STAA   SPED+$20,X
02528A CD1D 24 0F CD2E         BCC    SP1
02529A CD1F 0C                 CLC
02530A CD20 A6 B0    A         LDAA   SPED+$10,X
02531A CD22 89 01    A         ADCA   #1
02532A CD24 A7 B0    A         STAA   SPED+$10,X
02533A CD26 24 06 CD2E         BCC    SP1
02534A CD28 A6 A0    A         LDAA   SPED,X
02535A CD2A 8B 01    A         ADDA   #1
02536A CD2C A7 A0    A         STAA   SPED,X
02537                          *
02538A CD2E 96 E3    A SP1     LDAA   COUNT1
02539A CD30 44                 LSRA
02540A CD31 97 E3    A         STAA   COUNT1
02541A CD33 86 02    A         LDAA   #02
02542A CD35 97 EA    A         STAA   INDEX
02543A CD37 BD C030  A         JSR    NEXTLN
02544A CD3A 24 9C CCD8         BCC    SP7
02545A CD3C 39                 RTS
02546                          *
02547                          *
02548                          *        MOTOROLA M68SAM CROSS-ASSEMBLER PAGE 1
02549                          *
02550                          * M68SAM IS THE PROPERTY OF MOTOROLA SPD, INC.
02551                          * COPYRIGHT 1974 BY MOTOROLA INC
02552                          *
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02553                          * MOTOROLA M6800 CROSS ASSEMBLER, RELEASE 1.1
02554                          * WRITTEN BY M.T.C. , RELEASE 2.0
02555                          *
02556                          * THIS PROGRAM MATERIAL FOR DESIGN STUDY ONLY
02557                          *
02558                          *       1982 03 17
02559                          *
02560                          *    RELEASE LEVEL 6.75
02561                          *
02562                                  NAM    PCS8A
02563                          *
02564                          * PCS8A AS  REV. 0.00
02565                          * STEVEN SKELTON
02566                          *
02567                          * THIS ROUTINE ACCOUNTS FOR VEHICLE SPEED CLASSIFICATION.
02568                          * IT TREATS LANES AFFECTED BY PCS3A AND PCS3C.
02569                          *
02570A CDA0                            ORG    PCS8A
02571                          *
02572A CDA0 86 07    A                 LDAA   #7
02573A CDA2 97 E8    A                 STAA   COUNT6
02574A CDA4 96 E6    A                 LDAA   COUNT4
02575A CDA6 27 04 CDAC                 BEQ    SPA99
02576A CDA8 7F 00E6  A                 CLR    COUNT4
02577A CDAB 39                         RTS
02578A CDAC 86 01    A SPA99   LDAA   #01
02579A CDAE 97 E6    A         STAA   COUNT4
02580                          *
02581A CDB0 CE 0270  A         LDX    #$0270
02582A CDB3 86 80    A         LDAA   #$80
02583A CDB5 DF EA    A         STX    INDEX
02584A CDB7 97 E3    A         STAA   COUNT1
02585A CDB9 96 E3    A SPA17   LDAA   COUNT1
02586A CDBB 94 B2    A         ANDA   B0A
02587A CDBD 26 67 CE26         BNE    SPA11
02588A CDBF E6 0A    A         LDAB   C2E,X
02589A CDC1 27 0A CDCD         BEQ    SPA49
02590A CDC3 6F 0A    A SPA59   CLR    C2E,X
02591A CDC5 6F 02    A         CLR    B2E,X
02592A CDC7 6F 8F    A         CLR    0CC+$80,X
02593A CDC9 6F 03    A         CLR    B2S,X
02594A CDCB 20 59 CE26         BRA    SPA11
02595A CDCD E6 02    A SPA49   LDAB   B2E,X
02596A CDCF 27 55 CE26         BEQ    SPA11
02597A CDD1 6F 02    A         CLR    B2E,X
02598A CDD3 D1 E8    A         CMPB   COUNT6
02599A CDD5 2B EC CDC3         BMI    SPA59
02600A CDD7 DF F6    A         STX    TEMP02
02601A CDD9 D7 F8    A         STAB   TEMP04
02602A CDDB A6 05    A         LDAA   LSA,X
02603A CDDD 97 F9    A         STAA   TEMP05
02604A CDDF BD C9E0  A         JSR    DIV
02605A CDE2 D6 FA    A         LDAB   TEMP06
02606A CDE4 D7 F5    A         STAB   TEMP01
02607A CDE6 DE F6    A         LDX    TEMP02
02608A CDE8 E6 03    A         LDAB   B2S,X
02609A CDEA 6F 03    A         CLR    B2S,X
02610A CDEC DF F6    A         STX    TEMP02
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PAGE  046  LUCK    .SA:1  PCS8A

02611A CDEE D7 F8     A         STAB   TEMP04
02612A CDF0 A6 05     A         LDAA   LSA,X
02613A CDF2 97 F9     A         STAA   TEMP05
02614A CDF4 BD C9E0   A         JSR    DIV
02615                    *
02616A CDF7 86 01     A         LDAA   #01
02617A CDF9 97 EA     A         STAA   INDEX
02618A CDFB DE EA     A         LDX    INDEX
02619                    *
02620A CDFD D6 FA     A         LDAB   TEMP06
02621A CDFF DB F5     A         ADDB   TEMP01
02622A CE01 57                  ASRB
02623A CE02 D7 F5     A         STAB   TEMP01
02624A CE04 D7 F8     A         STAB   TEMP04
02625A CE06 A6 8F     A         LDAA   OCC+$80,X
02626A CE08 6F 8F     A         CLR    OCC+$80,X
02627A CE0A 97 F9     A         STAA   TEMP05
02628A CE0C BD C9B0   A         JSR    MULT
02629A CE0F D6 FB     A         LDAB   TEMP07
02630                    *
02631A CE11 86 02     A         LDAA   #02
02632A CE13 97 EA     A         STAA   INDEX
02633A CE15 DE EA     A         LDX    INDEX
02634                    *
02635A CE17 E0 07     A         SUBB   LDA,X
02636A CE19 D1 A3     A         CMPB   TRUCK
02637A CE1B 2B 17 CE34          BMI    SPA2
02638A CE1D 0C                  CLC
02639                    *
02640A CE1E 86 01     A         LDAA   #01
02641A CE20 97 EA     A         STAA   INDEX
02642A CE22 DE EA     A         LDX    INDEX
02643                    *
02644A CE24 20 04 CE2A          BRA    SPA9
02645A CE26 20 56 CE7E SPA11    BRA    SPA1
02646A CE28 20 8F CDB9 SPA7     BRA    SPA17
02647A CE2A A6 8E     A SPA9    LDAA   LENL+$80,X
02648A CE2C 89 01     A         ADCA   #1
02649A CE2E A7 8E     A         STAA   LENL+$80,X
02650A CE30 24 02 CE34          BCC    SPA2
02651A CE32 6C 8D     A         INC    LENH+$80,X
02652                    *
02653A CE34 CE 0200   A SPA2    LDX    #$0200
02654A CE37 D6 F5     A         LDAB   TEMP01
02655A CE39 E1 80     A SPA4    CMPB   SPD,X
02656A CE3B 2E 29 CE66          BGT    SPA12
02657A CE3D 2A 20 CE5F          BPL    SPA3
02658A CE3F 08           SPA6   INX
02659A CE40 8C 020B   A         CPX    #$020B
02660A CE43 26 F4 CE39          BNE    SPA4
02661A CE45 0C                  CLC
02662A CE46 A6 C0     A         LDAA   SPED+$20,X
02663A CE48 89 01     A         ADCA   #1
02664A CE4A A7 C0     A         STAA   SPED+$20,X
02665A CE4C 24 0F CE5D          BCC    SPA5
02666A CE4E 0C                  CLC
02667A CE4F A6 B0     A         LDAA   SPED+$10,X
02668A CE51 89 01     A         ADCA   #1
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PAGE  047  LUCK    .SA:1  PCS8A

02669A CE53 A7 B0     A         STAA   SPED+$10,X
02670A CE55 24 06 CE5D          BCC    SPA5
02671A CE57 A6 A0     A         LDAA   SPED,X
02672A CE59 8B 01     A         ADDA   #1
02673A CE5B A7 A0     A         STAA   SPED,X
02674A CE5D 20 1F CE7E SPA5     BRA    SPA1
02675                    *
02676A CE5F 96 FA     A SPA3    LDAA   TEMP06
02677A CE61 A1 90     A         CMPA   REM,X
02678A CE63 2A 01 CE66          BPL    SPA12
02679A CE65 08                  INX
02680A CE66 0C           SPA12  CLC
02681
02682A CE67 A6 C0     A         LDAA   SPED+$20,X
02683A CE69 89 01     A         ADCA   #1
02684A CE6B A7 C0     A         STAA   SPED+$20,X
02685A CE6D 24 0F CE7E          BCC    SPA1
02686A CE6F 0C                  CLC
02687A CE70 A6 B0     A         LDAA   SPED+$10,X
02688A CE72 89 01     A         ADCA   #1
02689A CE74 A7 B0     A         STAA   SPED+$10,X
02690A CE76 24 06 CE7E          BCC    SPA1
02691A CE78 A6 A0     A         LDAA   SPED,X
02692A CE7A 8B 01     A         ADDA   #1
02693A CE7C A7 A0     A         STAA   SPED,X
02694                    *
02695A CE7E 96 E3     A SPA1    LDAA   COUNT1
02696A CE80 44                  LSRA
02697A CE81 97 E3     A         STAA   COUNT1
02698A CE83 86 02     A         LDAA   #02
02699A CE85 97 EA     A         STAA   INDEX
02700A CE87 BD C030   A         JSR    NEXTLN
02701A CE8A 24 9C CE28          BCC    SPA7
02702A CE8C 39                  RTS
02703                           END
TOTAL ERRORS 00000--00000
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C42A ADTBL  01091#
C0B9 AGAIN  00328#00348
00ED AR1MOL 00077#
00EC AR1MOM 00076#01275 01298 01325 01387 01410 01437
00EF AR1MVL 00079#01332 01444
00EE AR1MVM 00078#
C4E1 AVG    01517#
D004 B1     00446#00454 00457
0000 B1E    00110#02002 02003 02433 02437 02441
0001 B1S    00111#02009 02435 02450 02451
0002 B2E    00112#02092 02093 02591 02595 02597
0003 B2S    00113#02099 02593 02608 02609
D302 BEGIN  00793 00848#00886
D01A C10    00461#00470
D038 C11    00475 00477#
D032 C12    00474#00483
D020 C13    00462 00464#
D132 C18    00626 00628#
D137 C19    00629 00631#
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0008 C1E     00118#02005 02430 02432
0009 C16     00119#
D114 C2      00608 00610#
000A C2E     00120#02095 02588 02590
000B C26     00121#
D119 C3      00611 00613#
D11E C4      00614 00616#
D123 C5      00617 00619#
D128 C6      00620 00622#
D12D C7      00623 00625#
D0F9 C87     00593#00601
D0E1 C88     00561#00589
D14A C9      00641 00644#
C0D4 CHECK   00338 00342 00344 00347#
C000 CMP16   00152#00219 01544
00E3 COUNT1  00069#02426 02427 02538 02540 02584 02585 02695 02697
00E4 COUNT2  00070#
00E5 COUNT3  00071#02416 02418 02421
00E6 COUNT4  00072#00497 02574 02576 02579
00E7 COUNT5  00073#
00E8 COUNT6  00074#02415 02439 02573 02598
009F CYCLE   00043#00500 00781 00783 00787 00791 00849 00876 00878 00882 00884
C409 D1      01068#01074
C40B D2      01069#01072
C438 D3      01096 01098#
C441 D5      01101 01103#
C42D D50     01092#01122
C453 D56     01111 01113#
C849 DA1     01182#01186
C84B DA2     01183#01186
C87A DA3     01210 01212#
C883 DA5     01215 01217#
C86F DA50    01206#01236
C895 DA56    01225 01227#
0005 DAOFMO  00004#00700 00710 00720 00894 00904 00914
0008 DAOFWK  00005#00702 00712 00722 00896 00906 00916
00BC DATA0L  00063#01928
00AC DATA0M  00053#00955 00956 00969 00971 01806 01807 01820 01822 01930 01933
00BD DATA1L  00064#
00AD DATA1M  00054#
007F DAYMAX  00035#00518
000A DET1    00103#01283 01288 01395 01400 01501 01516 01536 01537 01591 01606 01626 01627 02034 02035
             02119 02120
008C DETER1  00020#01519 01520
008D DETER2  00021#
008E DETER3  00022#01609 01610
008F DETER4  00023#
00BE DETINL  00065#02104 02220
00AE DETINM  00055#02014 02164
C9E0 DIV     00170#00403 02446 02456 02604 02614
CA3E DO      01833 01838#
C2DE DONE    00982 00987#
00D0 DTCTKL  00080#00492 00494
00C0 DTCTRM  00067#00488 00490 00970 01821 01933
CA3F DTRTB   01808 01843#
C2DF DTRTBL  00957 00992#
C4B5 E3      01286#01292
C4BB E5      01285 01291#
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C8E5 EA3     01398#01404
C8EB EA5     01397 01403#
C5A1 ER9     01535 01538#
C9A4 ER90    01625 01628#
0080 ERRBIT  01487#01508 01598
C599 ERSET   01500 01509 01534#
C99C ERSETT  01590 01599 01624#
C6B0 G1      01660 01666#
C6FE G10     01710 01716#
C6D1 G11     01687#01690
C6F6 G15     01707 01711#
C702 G20     01718#01754
C740 G30     01723 01756#
C744 G35     01758#
C74B G36     01759 01762#
C736 G40     01724 01747 01750#
C70E G45     01722 01726#
C6B6 G5      01662 01667 01670#
C6E2 G50     01699#01766
C6CA G51     01680 01682#
C726 G52     01736 01738#
C754 G60     01712 01768#
C6BB G7      01674#01683
C6A6 G70     01656 01658#
C6A8 G71     01657 01659#
C6CD G9      01675 01685#
CF10 GA1     02277 02283#
CF5E GA10    02327 02333#
CF31 GA11    02304#02307
CF56 GA15    02324 02328#
CF62 GA20    02335#02372
CFA0 GA30    02340 02374#
CFA4 GA35    02376#
CFAB GA36    02377 02380#
CF96 GA40    02341 02365 02368#
CF6E GA45    02339 02343#
CF16 GA5     02279 02284 02287#
CF42 GA50    02316#02384
CF2A GA51    02297 02299#
CF86 GA52    02354 02356#
CFB4 GA60    02329 02386#
CF1B GA7     02291#02300
CF06 GA70    02273 02275#
CF08 GA71    02274 02276#
CF2D GA9     02292 02302#
00B0 G0      00058#01998 02029 02030 02174 02175 02428
00B2 G0A     00060#02048 02114 02115 02230 02231 02586
00B1 G0T     00059#02007 02044 02045 02183 02184
00B3 G0TA    00061#02097 02128 02129 02239 02240
D2B3 H1      00799 00801#
D336 H10     00881 00884#
D2D9 H11     00820 00822#
D2C6 H2      00809 00811#
D2EC H20     00830 00832#
D2A7 H3      00795#00887
D28D H30     00773 00779#
D259 H31     00752#00777
D33F H4      00847 00874 00889#
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D2A1 HP      00786 00791#
D250 HEADER  00158#00746
0009 HR      00006#01655 02273
00EA INDEX   00075#00242 00245 00247 00262 00950 00951 00968 00981 00984 01126 01134 01327 01329 01439
             01441 01540 01545 01801 01802 01819 01832 01835 02425 02459 02460 02475 02476 02484 02485
             02542 02583 02617 02618 02632 02633 02641 02642 02699
D000 INIT    00157#00436
C2A0 INPUT   00159#00945 01912
CA00 INPUTT  00171#01796 01913
CA12 IP1     01810#01836
CA14 IP2     01812#01831
CA38 IP3     01834#
CA33 IP5     01832#
C2B2 IPT1    00959#00985
C2B4 IPT2    00961#00980
C2D8 IPT3    00983#
C2D3 IPT5    00981#
00F4 KAY1    00084#00501 01065 01123
00A2 KAY2    00047#00502 01179 01237
0006 LD      00116#00593 02478
0007 LDA     00117#00594 02635
0012 LDESW1  00010#00461 00487 00439
0013 LDESW2  00011#00474 00491 00491
0014 LDNW1   00012#
0015 LDNW2   00013#
007A LENDAY  00032#00499 00790
00A4 LENGTH  00049#00658 00662 00676 00858
000E LENL    00107#02344 02346 02490 02492 02647 02649
000D LENM    00106#02343 02345 02494 02651
007D LNBUF1  00034#00665
007B LNDAY1  00033#00678
000C LNDIS1  00105#00463 00476 01291 01403 01534 01624
C55E LO1     01497#01511
C585 LO11    01518 01521#
C57C LO12    01516#01530
C598 LO13    01524 01531#
C566 LO7     01498 01501#
C570 LO9     01507 01510#
C95E LOA1    01587#01601
C988 LOA11   01608 01611#
C97F LOA12   01606#01620
C99B LOA13   01614 01621#
C968 LOA7    01588 01591#
C973 LOA9    01597 01600#
C4A5 LOOP1   01276#01279
C4B0 LOOP2   01283#01315
C4CA LOOP3   01299#
C4E5 LOOP4   01319#01322
C4F0 LOOP5   01326#01340
C8D5 LOOPA1  01388#01391
C8E0 LOOPA2  01395#01427
C8FA LOOPA3  01411#
C915 LOOPA4  01431#01434
C920 LOOPA5  01438#01452
0004 LS      00114#00581 02444 02454
0005 LSA     00115#00582 02602 02612
C03E LSTLN   00243 00250#
C9E6 MD1     00408#00415
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C9EF MD2     00411 00414#
C9B5 MM1     00386#00393
C9C0 MM2     00389 00392#
0004 MONTH   00003#00678 00708 00718 00892 00902 00912
004E MRAM    00018#
C9B0 MULT    00169#00381 00651 00656 02471 02628
C030 NEXTLN  00153#00240 01073 01088 01118 01187 01202 01232 01314 01426 01510 01600 02049 02133 02188
             02244 02543 02700
0010 NLANE1  00008#
0011 NLANE2  00009#
C4DC NLOOP2  01289 01310 01314#
C90C NOOP2   01401 01422 01426#
0016 NVOL1   00014#01692 02309
0017 NVOL2   00015#01711 02328
CA29 NXDET   01818 01824#
C2C9 NXTDET  00967 00973#
0082 O1BIT   01486#01499 01589
009C OC10CL  00040#
009B OC10CM  00039#00511 01494 01584
000F OCC     00108#02040 02125 02434 02468 02469 02592 02625 02626
0006 OCC1L   00099#01094 01095 01208 01209
0005 OCC1M   00098#01097 01211
0003 OCMN1L  00096#01099 01100 01213 01214 01297 01409
0002 OCMN1M  00095#01079 01102 01193 01216 01295 01407 01489 01579
C5A2 OCTEST  01497 01540#01587
C557 OCTST1  01494#
C012 ONEBIG  00224 00228 00232#
C00F ONESML  00225 00229#
0000 OSIX1   00093#01069 01092 01103 01183 01206 01217 02038 02123
C506 OUT     01333 01342#
C507 OUT1    01343#
C936 OUTT    01445 01454#
C937 OUTT1   01455#
C0C3 P1      00334 00337#
C0B5 P10     00310 00316#
0000 PCLN1   00130#01345
0080 PCLN2   00131#01346
00AB PCLN3   00132#01347
00C0 PCLN4   00133#01348
00CD PCLN5   00134#01349
00D5 PCLN6   00135#01350
00DB PCLN7   00136#01351
00E0 PCLN8   00137#01352
C350 PCS2    00160#01911
D4A0 PCS3    00161#01989
D550 PCS3A   00172#02078
CBB0 PCS3B   00173#02160
CC00 PCS3C   00174#02215
C400 PCS4    00162#01061
CB40 PCS4A   00166#01175
C4A0 PCS5    00163#01270
CBD0 PCS5A   00167#01382
C550 PCS6    00164#01484
C950 PCS6A   00168#01576
C6A0 PCS7    00165#01653
CF00 PCS7A   00177#02270
CC50 PCS8    00175#02412
CDA0 PCS8A   00176#02570
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0000 PCSCAD 00001#
00F3 PCW1   00083#00504 01078 01081 01192 01195
C508 PCWTAB 01317 01344#01429
C91B PICKUP 01432 01436#
C4EB PIKUP  01320 01324#
C859 POP1   01180 01192#01203
5001 PORT1  00181#
5002 PORT2  00182#
5003 PORT3  00183#
5004 PORT4  00184#
C472 PRO16  01080 01134#01194
C464 PROB   01083 01126#01197
C419 PROP1  01066 01078#01089
C0B0 PRPRT  00156#00312 01137 01328 01440
C0B0 PRPRTB 00155#00305 01129
009D PTR    00041#00674 00805 00808 00810 00811 00814 00856 01670
0096 PTRL   00037#00683 00826 00829 00831 00832 00835 00864 02287
0098 PTRS   00038#00691 00754 00756 00761 00763 00768 00775 00845 00872
0090 REN    00123#02520 02677
D045 RET    00487#
C35E S0     01914 01924#
C36D S1     01932#01953 01960
C060 SETUP  00154#00260 01063 01076 01091 01177 01190 01205 01282 01394 01496 01586 01990 02080 02161
            02217
0095 SIZE   00036#00632 01676 01686 02293 02303
D327 SMALL  00874#
CD2E SP1    02488 02517 02528 02533 02538#
CCD6 SP11   02429 02436 02438 02488#
CD16 SP12   02499 02521 02524#
CC69 SP17   02427#02489
CCE4 SP2    02480 02493 02496#
CD0F SP3    02500 02519#
CCE9 SP4    02498#02503
CC7D SP49   02431 02437#
CD0D SP5    02508 02513 02517#
CC73 SP59   02432#02440
CCEF SP6    02501#
CCD8 SP7    02489#02544
CCDA SP9    02487 02490#
CC5C SP99   02417 02420#
CE7E SPA1   02645 02674 02685 02690 02695#
CE26 SPA11  02587 02594 02596 02645#
CE46 SPA12  02656 02678 02680#
CDB9 SPA17  02585#02646
CE34 SPA2   02637 02650 02653#
CE5F SPA3   02657 02676#
CE39 SPA4   02655#02660
CDCD SPA49  02589 02595#
CE5D SPA5   02665 02670 02674#
CDC3 SPA59  02590#02599
CE3F SPA6   02658#
CE28 SPA7   02646#02701
CE2A SPA9   02644 02647#
CDAC SPA99  02575 02578#
0078 SPBUF  00031#00509
00A0 SPC1   00045#01705 01717 01753 02322 02334 02371
00A1 SPC2   00046#01709 01714 01750 01752 02326 02331 02368 02370
0080 SPD    00122#00523 00524 00528 00529 00533 00534 00538 00539 00544 00545 00549 00550 00554 00555
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                00559 00560 00564 00565 00570 00571 00575 00576 02498 02655
  0076 SPDAY1   00030#00507
  0075 SPDDAY   00029#00498 00789
  00A0 SPED     00124#00752 00753 00759 00760 00766 00767 02505 02507 02510 02512 02514 02516 02525 02527
                02530 02532 02534 02536 02662 02664 02667 02669 02671 02673 02682 02684 02687 02689 02691
                02693
  00A6 SPEED    00050#00513 00685 00866
  0400 START    00126#00666 00850
  000B STCHG1   00104#02032 02117
  00BF STCHGL   00066#02109 02126 02225 02235
  00AF STCHGM   00056#02019 02026 02027 02041 02169 02179
  D4A7 T1       01994#02050
  D4F8 T14      02020 02036 02042 02047#
  D4EC T16      02015 02038#
  D4D2 T2       02019#
  D4BF T20      01999 02004 02006#
  D4C7 T21      02008 02011#
  D557 TA1      02084#02134
  D5A2 TA14     02110 02121 02127 02131#
  D596 TA16     02105 02123#
  D582 TA2      02109#
  D56F TA20     02089 02094 02096#
  D577 TA21     02098 02101#
  CBB5 TB1      02164#02189
  CBD1 TB14     02170 02177 02180 02187#
  CBC6 TB16     02165 02179#
  CBB9 TB2      02169#
  0001 TBIT0    00141#00993 01010 01844 01861
  0002 TBIT1    00142#00995 01012 01846 01863
  0004 TBIT2    00143#00997 01014 01848 01865
  0008 TBIT3    00144#00999 01016 01850 01867
  0010 TBIT4    00145#01001 01018 01852 01869
  0020 TBIT5    00146#01003 01020 01854 01871
  0040 TBIT6    00147#01005 01022 01856 01873
  0080 TBIT7    00148#01007 01024 01858 01875 01991 02041 02142 02218
  CC05 TC1      02220#02245
  CC21 TC14     02226 02233 02236 02243#
  CC16 TC16     02221 02235#
  CC09 TC2      02225#
  00F5 TEMP01   00085#00451 00452 00464 00468 00477 00481 00583 00587 00595 00599 00606 00637 00638 00640
                00948 00965 01525 01529 01615 01619 01693 01706 01758 01761 01799 01816 01994 01995 01996
                02011 02012 02013 02084 02085 02086 02101 02102 02103 02310 02323 02376 02379 02448 02464
                02466 02497 02606 02621 02623 02654
  00F6 TEMP02   00086#00223 00455 00466 00467 00479 00480 00584 00585 00596 00597 00963 01495 01526 01528
                01585 01616 01618 01703 01716 01718 01721 01814 02320 02333 02335 02338 02442 02449 02452
                02600 02607 02610
  00F7 TEMP03   00087#00227 00653 00659 00749 00771 00772 01515 01521 01523 01605 01611 01613 01695 01731
                01732 01757 01992 01997 02006 02048 02082 02087 02096 02132 02312 02348 02349 02375
  00F8 TEMP04   00088#00388 00410 00412 00648 00655 00958 00973 00976 01064 01128 01130 01136 01138 01178
                01490 01541 01580 01671 01681 01685 01737 01739 01809 01824 01827 01925 01952 01958 02288
                02298 02302 02355 02357 02443 02453 02467 02601 02611 02624
  00F9 TEMP05   00089#00390 00407 00650 01127 01135 01543 01678 01679 01734 01735 01927 01959 02295 02296
                02351 02352 02445 02455 02470 02603 02613 02627
  00FA TEMP06   00090#00394 00416 00660 00751 00758 00765 00774 01542 01696 01699 01929 01951 01957 02313
                02316 02447 02463 02519 02605 02620 02676
  00FB TEMP07   00091#00395 00417 00652 00657 00774 01697 01762 01764 01954 01956 02314 02380 02382 02472
                02629
  00A3 TRUCK    00048#00516 02479 02636
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0009 VD1L    00102#01109 01110 01223 01224 01727 01729
0008 VD1M    00101#01112 01226 01726 01728
0004 VMN1    00097#01082 01115 01116 01196 01229 01230 01293 01405
0073 VOBUF1  00028#00505 00643 00645 00647 00654 00664 00796 00802 00806 00812 00817 00823 00827 00833
0091 VODAY1  00027#00667 00695 00795 00798 00800 00801 00804 00851 00889
00AB VODAYL  00051#00677 00705 00816 00819 00821 00822 00825 00859 00899
00AA VODAYS  00052#00686 00715 00837 00839 00867 00909
0007 VOL1    00100#01106 01107 01220 01221
0070 VOLDAY  00025#00496 00784 00788 00879 00883
0018 VOLDW1  00016#00607 00610 00613 00616 00619 00622 00625 00628 01701 02318
0001 VSIX1   00094#01104 01117 01218 01231 02022 02112
0071 WW      00026#00668
00F2 XLANE   00082#
0003 YEAR    00002#00696 00706 00716 00890 00900 00910
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